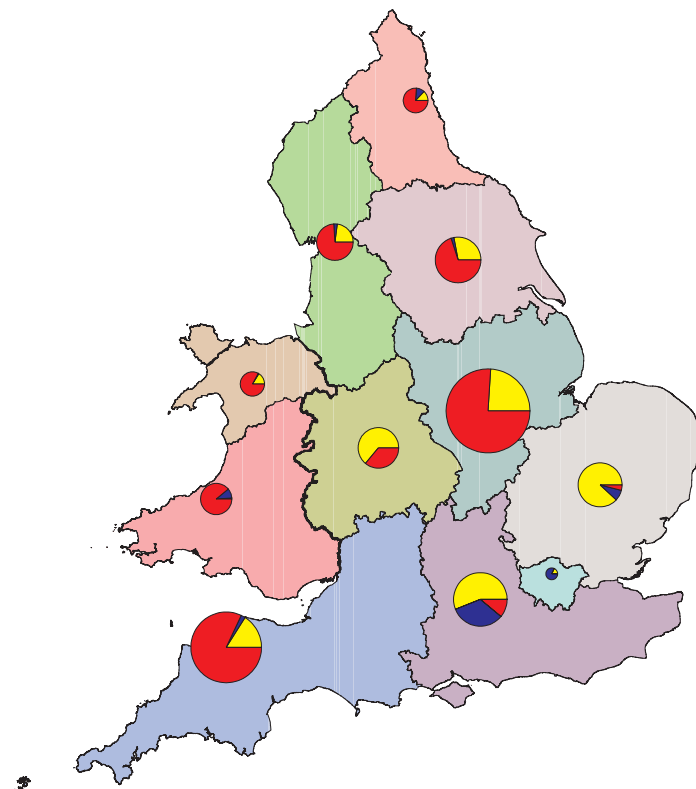




OFFICE OF THE
DEPUTY PRIME MINISTER

COLLATION OF THE RESULTS
OF THE
2001
AGGREGATE MINERALS SURVEY
FOR ENGLAND AND WALES



**British
Geological Survey**
NATURAL ENVIRONMENT RESEARCH COUNCIL

British Geological Survey

COLLATION
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Commissioned Report CR/03/53N

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in association with J F Cowley, Mineral & Resource Planning Associates
on behalf of the Office of the Deputy Prime Minister and Welsh Assembly Government**

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COLLATION OF THE AM2001 SURVEY

1. INTRODUCTION

1.1 Aggregate Minerals (AM) surveys, based at four-yearly intervals since 1973, provide an in-depth and up-to-date understanding of regional and national sales, inter-regional flows, transportation, consumption, and permitted reserves of primary aggregates. Recent surveys have also provided information on selected secondary materials suitable for use as aggregates. These surveys are used to inform Government on the production, movement and consumption of aggregates in order to review and update planning policy guidance. The data are made publicly available.

1.2 This document is the collation of the data for primary aggregates for the year 2001. Separate surveys of alternative materials, such as selected mineral wastes, construction and demolition wastes and industrial by-products, have also been undertaken for the same year. This will, for the first time, enable a complete picture of the production and use of all aggregates to be built up for a single year. In addition to presenting information on regional and national sales, and permitted reserves of primary aggregates, the AM2001 report also presents data for selected environmental designations, together with sales of aggregates by transport method. Information is also presented on the quantity of mineral granted and refused planning permission between 1998 and 2001 by site type and environmental designation.

1.3 The information is presented for England and Wales and for individual Regions and was collected from aggregate producers by Mineral Planning Authorities (MPAs) using a standard form. It was subsequently collated at regional level by the relevant Regional Aggregates Working Party Secretary (RAWPs, see Appendix H) and at national level by the British Geological Survey (BGS) on behalf of the Office of the Deputy Prime Minister (ODPM) and the Welsh Assembly Government. Similar information was published by the then Department of the Environment for 1973, 1977, 1985, 1989 and 1993, and the Department of the Environment, Transport and the Regions for 1997 (British Geological Survey, 2000). Comparisons of sales, consumption and permitted reserves for these years with 2001 data are provided in Tables D1 to D3 and Figures 3 to 5.

1.4 The BGS was commissioned in August 2001 by the then Department for Transport, Local Government and the Regions to design and implement the AM2001 survey and to collate, interpret and report the results. The study was overseen by a Steering Group, which included representatives of ODPM, the Welsh Assembly Government, RAWPs, the Planning Officers' Society, the aggregates industry and environmental bodies (Appendix I).

POLICY BACKGROUND

1.5 The key Government policies and planning advice on minerals in England are set out in Mineral Planning Guidance Note 1 *General Considerations and the Development Plan System* (1996). This guidance is currently being revised. Detailed guidance on aggregates is set out in Mineral Planning Guidance Note 6 *Guidelines for Aggregates Provision in England*

(1994). The national and regional guidelines set out in MPG6 are proposed to be revised and have been circulated for consultation. However, there will be no revision of MPG6 and specific guidance on aggregates provision will appear as an annex to MPG1. *Mineral Planning Policy Wales* (2000) sets out the land-use planning policy guidance of the Welsh Assembly Government in relation to minerals extraction and development in Wales. It includes all minerals except marine aggregates. A draft Technical Advice Note (TAN) on aggregates was published in early 2002 for consultation.

1.6 The results of the AM2001 Survey will be used to:

- monitor and develop planning policies for the supply of aggregates in both England and Wales;
- assist in deciding the provisions for aggregate minerals to be made in regional planning guidance and development plans;
- inform all stakeholders of the current state of aggregates supply; and
- provide baseline information to help monitor the future assessment and effectiveness of the Aggregates Levy.

1.7 The results will also be used as a source of contextual data with respect of planning applications for the extraction of minerals.

AM2001 SURVEY

1.8 The AM2001 results were collected using two standard inquiry forms (Forms A and B) (see Appendix E). Form A relates to sales by end use, sales by destination and transport method, and permitted reserves of primary aggregates. This form was forwarded to the following sites by MPAs in England and Wales for completion and return by quarry operators/owners;

- all active quarries producing land-won natural aggregates at some time during 2001, either as a principal activity or as a subsidiary activity, such as a by-product of building stone or silica sand extraction;
- inactive sites, either worked in the past or yet to be worked (greenfield), that contain permitted reserves of aggregates;
- marine wharves at which marine-dredged sand and gravel was landed and processed in 2001; and
- marine wharves at which crushed rock from outside England and Wales was landed in 2001.

1.9 There are 158 authorities in England and 25 in Wales designated as MPAs. However, a number of unitary authorities (London boroughs, metropolitan districts and a few rural authorities) are either totally urban or have no mineral workings for aggregates. Excluding MPAs with no aggregate mineral workings, data were collected for all of the remaining authorities (some 108).

1.10 Both the Quarry Products Association (QPA) and the British Aggregates Association (BAA) supported the survey. The rate of return of Form A was very high for this voluntary survey and was over 90% in all Regions. Where figures were not forthcoming, and where feasible, estimates may have been made by the MPAs or RAWP Technical Secretaries. The regional reports contain further

details of these estimates. Included in the survey were 1,340 quarries, of which 319 were inactive, including 48 which have yet to be worked. The survey also includes 67 wharves at which marine sand and gravel was landed and 16 wharves landing crushed rock. Some wharves landed both sand and gravel and crushed rock. The distribution of the sites surveyed is shown in Maps 2 and 3 and Table 13.

1.11 Sales and distribution data relate to 2001 and the permitted reserves are estimated at 31st December 2001. The information is presented by Regional Aggregates Working Party Area (Map 1) using the boundaries that were applicable as at 31st December 2001. Some regional boundaries have changed significantly from previous AM surveys. This makes regional comparisons more difficult. In England, the former Northern Region has been disbanded with Cumbria now added to, and forming part of, a larger North West Region. The remaining part of the former Northern Region has been renamed the North East. In the former South East Region, Essex, Bedfordshire and Hertfordshire, together with the whole of the former East Anglia Region now form part of a new East of England Region. London, which was formerly in the South East Region, is now a separate Region on its own. There have been no changes in Wales. The MPAs comprising the separate regions of England and Wales are shown on Map 1 and listed in Appendix K.

1.12 Data are presented on sand and gravel, both land-won and marine dredged, and crushed rock aggregate. The latter includes limestone (including dolomite), igneous rock (including metamorphic rock), sandstone (including gritstone, greywacke and quartzite), chalk and ironstone. Both chalk and ironstone are used in some Regions for less demanding aggregate applications. However, they contribute less than 1.2% to total supply. In addition to data on primary aggregates, the survey also collected information on china clay waste, which is produced only in the South West. Selected data on china clay waste is presented but it is not included in the figures for total sales, consumption and reserves.

1.13 Form B sought information on both the numbers of sites granted (or refused) planning permission to supply wholly, or in part, aggregate minerals, and the quantity of mineral that these contain for the period 1998 to 2001. Form B was completed by individual MPAs and compiled into a database by BGS.

1.14 In preparing this report, the data have been presented in a style that is, as far as possible, consistent with previous surveys and comparisons with earlier surveys are made where appropriate. Whereas every effort has been made to ensure the accuracy of the figures presented, neither the ODPM/Welsh Assembly Government, nor the BGS can be held responsible for any errors contained therein.

1.15 Regional collations of the 2001 survey data will also be published in the RAWP Annual Reports. These are available from the RAWP secretaries (see Appendix H). These contain more detailed information, generally at MPA (often County) level.

CONFIDENTIALITY

1.16 Data on an individual quarry are normally considered to be confidential. Any figure disclosed must include at least three companies' interests unless all the parties involved have been contacted and their prior approval obtained in writing, permitting the release of the information. For the purposes of the AM2001 survey, the QPA, whose members account for a major proportion of total sales, lifted these confidentiality restrictions. This has allowed additional data to be disclosed, particularly for environmental designations. The BAA advised its members to adhere to the QPA policy on the release of confidential data to the AM2001 survey. Neither association was able to compel its member companies to complete the survey. For non-QPA and BAA members the normal three company rule has been applied.

SURVEY COVERAGE

1.17 In contrast to previous AM surveys, the AM2001 collation has, in part, been carried out electronically. Forms A and B were prepared in Microsoft Excel and whilst often completed manually, all the data were input electronically so that collation at MPA, regional and national level was greatly simplified.

1.18 Data on sales of construction and demolition wastes, and secondary aggregates were the subject of separate surveys carried out by the Symonds Group on behalf of the ODPM and the Welsh Assembly Government. The results of these surveys were published in 2002.

1.19 The AM2001 survey refers to 'sales' of aggregates. The term relates to material leaving a quarry as measured at a weighbridge. The term 'sales' is more accurate than 'production' as used in some previous surveys. However, as weighbridge sales were the principle source of statistics on 'production' in previous surveys readers should not draw any statistical inferences from the change in terminology.

1.20 The main constraints on the data continue to be confidentiality considerations and 'unallocated sales' of unknown destination. However, these problems are much improved on the 1997 survey.

1.21 The Office for National Statistics (ONS), through the Annual Minerals Raised Inquiry (AMRI), also collects and publishes information on extractors' sales of aggregates within Great Britain on behalf of ODPM. Unlike AM surveys, this is a statutory survey carried out under the Statistics of Trade Act 1947. The results are published annually in the Business Monitor PA 1007 *Minerals Extraction in Great Britain*. To simplify the AM2001 survey the questions were generally harmonised with those in AMRI.

1.22 The prime purpose of the two surveys is different. AMRI is designed to provide a consistent time series of commodity data for economic/market analysis mainly by central government, but also industry and market analysts. The AM survey aims to provide comprehensive data for monitoring and facilitating aggregates provision at local, regional and national level. The output is used mainly by Government (ODPM and the Welsh Assembly Government), MPAs, industry and environmental interest groups. Only AMRI collects information on employment and the value of sales and only AM collects data on the

destination of sales, consumption, permitted reserves and information for environmentally designated areas.

1.23 A historical comparison of the data presented in both the AMRI and AM surveys indicates that AM surveys show somewhat larger totals for aggregate sales. For 2001 the respective totals for England and Wales were; AMRI 189.9 Mt against 192.9 Mt for AM2001. However, the total for Wales in AMRI (20.7 Mt) is somewhat greater than for AM2001 (19.9 Mt).

ACKNOWLEDGEMENTS

1.24 The authors wish to record their thanks to the MPAs, the aggregates industry, the Quarry Products Association (QPA) and the British Aggregates Association (BAA) for their co-operation at all stages in the execution of the survey and the collation of its results. Special mention is due to the officers of MPAs and the Secretaries of the RAWPs for their collation of the data at local and regional level, respectively. The Secretaries' names and contact addresses are given in Appendix H. Particular thanks are also due to the members of the Steering Group for their support and guidance and Dr Brian Marker (the Contract Manager), Dr Susan McGregor and Dr Richard Hilton of the ODPM.

COMMENTARY

2. NATIONAL OVERVIEW

2.1 Sales, consumption, and inter-regional flows of primary aggregates in England and Wales and by Region are summarised in Tables 1 to 8. Permitted reserves of aggregates at 31st December 2001 by Region and by environmental designation are summarised in Tables 9 and 10, and the numbers of sites granted and refused planning permission to supply wholly, or in part, aggregate minerals, and the amount of mineral that these contained are summarised in Tables 11 and 12. More detailed information on sales, reserves, and planning permissions/refusals are presented in Appendices A to C, respectively. A comparison of sales, consumption and permitted reserves of primary aggregates with all previous AM surveys is given in Appendix D.

SALES

2.2 **Total sales of primary aggregates** produced in England and Wales, including marine-dredged sand and gravel landings, were **192.9 Mt** in 2001 of which 90% was produced in England. **Total sales declined by just over 1% between 1997 (195.2 Mt) and 2001**, with crushed rock aggregates showing the largest fall (3%). In contrast sand and gravel production increased from **78.9 Mt** in 1997 to **80 Mt** in 2001. Total sales increased slightly in England from **171.3 Mt** in 1997 to **173 Mt** in 2001, but declined in Wales from **23.9 Mt** to **19.9 Mt**.

2.3 **Primary aggregates sales** in England and Wales, comprised **33% land-won and 8% marine-dredged sand and gravel, with crushed rock making up the remaining 59%**. Limestone/dolomite was by far the most important source of crushed rock aggregate, accounting for 68.6% of the total, followed by igneous rock (21%), sandstone (9.2%), and minor chalk and ironstone (1.2%). Marine sand and gravel supplied about 19% of total sand and gravel output in England compared with 45.5% in Wales.

2.4 **National Parks and AONBs cover 23.8% of the land area of England and 23.4% of Wales. In England and Wales 0.5% and 5% of total land-won sand and gravel sales were supplied from National Parks and AONBs respectively, and 9.7% and 8.2%, respectively for crushed rock.**

CONSUMPTION

2.5 **Total apparent consumption** of primary aggregates was **196.4 Mt** in 2001, of which **182.3 Mt** was used in England and **14.1 Mt** in Wales. Total consumption is somewhat higher than total sales because of imports from outside England and Wales, mainly Scotland. **Total unallocated sales** of unknown destination **were only 1 Mt**, almost all of which will have been consumed in England.

NATIONAL FLOWS

2.6 **England was a net importer of primary aggregates (8.8 Mt) and Wales a net exporter (5 Mt)**. Exports from Wales comprised 5.7 Mt of crushed rock and 0.55 Mt of sand and gravel. Imports were 0.9 Mt of crushed rock and 0.33 Mt sand and gravel. **Some 4 Mt (or 2% of total consumption) were imported into England and Wales from Scotland and Europe**. The major proportion was imported into the South East from Scotland.

2.7 Total exports of primary aggregates were small (0.25 Mt) and principally to Scotland from North East region and South Wales. Exports outside Great Britain were minimal and consisted mainly of limestone from North Wales. Substantial quantities of sand and gravel dredged from the UK Continental Shelf were landed at foreign ports. However, these flows were not covered by this survey.

RESERVES

2.8 **Total permitted reserves in active and inactive sites** (including sites worked in the past but still containing reserves, and sites that have yet to be opened) for both **aggregate and non-aggregate use** at the end of 2001 were **6,960 Mt**. Total reserves decreased by **314 Mt** on 1997. Crushed rock accounted for **89% (6,176 Mt)** and sand and gravel the remaining **11% (783 Mt)**. Of total permitted reserves, 79% were in active sites and 83% in England. Sites classified as 'Dormant' under the terms of the Planning & Compensation Act 1991 and the Environment Act 1995 were **611 Mt**, equivalent to about 9% of the total permitted reserves in England and Wales.

3. SALES OF PRIMARY AGGREGATES

3.1 Table 2a summarises sales by Region and country of origin, and by the major types of primary aggregate, i.e. land-won/marine sand and gravel and crushed rock. Table A4 summarises sales by mineral type for crushed rock aggregate. Table D1 compares primary aggregate sales for each AM survey since 1973. National and regional sales are also shown on Map 4.

REGIONAL SALES

3.2 The **East Midlands** continued to be by far the largest producing region at **41.3 Mt, equivalent to 21%** of total primary land-won aggregate sales for England and Wales. The **South West (31.7 Mt)** was the second largest source of land-won primary aggregates. Excluding London, the **North East (7.8 Mt)** was the smallest producing region of land-won primary aggregates.

3.3 Within these totals, the sand and gravel, and crushed rock balance differs significantly. The **East Midlands** accounted for the largest volume of **crushed rock aggregate sales (28%)** and the **South East** for the highest proportion of **sand and gravel (including marine-dredged) sales (25%)**.

3.4 The North East (**1.2 Mt**), the North West (**3.1 Mt**), North Wales (**1.3 Mt**) and South Wales (**0.12 Mt**) produced the smallest amounts of land-won sand and gravel. Conversely, the South East (**2.4 Mt**) and East of England (**0.65 Mt**) were the smallest crushed rock producers. The balance between sand and gravel, and crushed rock production very largely reflects the underlying geology and hence the aggregate resources within these areas. Regions with large crushed rock resources and permitted reserves (East Midlands and South West), and which are relatively close to major markets, continue to contribute substantially to the high levels of demand in more populated regions, notably the South East (where sand and gravel dominates and hard rock is scarce) and the North West.

3.5 The South West was the largest producer of limestone for aggregate use at **23.2 Mt** followed by the East Midlands with **16.4 Mt**. The East Midlands accounted for 60% (**14.4 Mt**) of total igneous rock aggregates sales, with the South West, North East and the West Midlands together accounting for a further 28%.

COMPARISON WITH 1997

3.6 The change to some regional boundaries has made comparisons with earlier years more difficult. Tables D1 to D3 group some Regions to allow comparisons to be made. On this basis all regions showed a **fall in total primary aggregate sales between 1997 and 2001** except the **South West and the grouping for the South East, London and East of England**. This reflects the overall increase in sand and gravel sales, although crushed rock sales also increased in the South West. Both sand and gravel and crushed rock sales declined in South Wales and North Wales between 1997 and 2001.

4. END USES

4.1 Two main categories of end use data were collected in AM2001 namely for the various types of aggregates and for non-aggregate ('industrial') uses, where associated with aggregates production. The AM2001 survey covered only those sites that produced aggregates for sale, either as the principal or as an ancillary activity. Quarries extracting aggregate minerals solely for non-aggregate applications were not covered. The rationale for collecting some information on non-aggregate uses is that in certain circumstances the associated permitted reserves could alternatively be deployed to meet demand for aggregates

4.2 Table 6 shows sales of primary aggregates (both crushed rock, and sand and gravel) grouped into broad end use product categories. Table A1, A2 and A3 in Appendix A provide sales by product for land-won sand and gravel, marine-dredged sand and gravel and crushed rock, respectively. However, these figures should be treated with a degree of caution. Although quarry operators will know what products they sell, they cannot always be sure what a product will ultimately be used for.

ALL PRIMARY
AGGREGATES

4.3 Of total aggregate production, **38% was used as concreting aggregate, 27% as roadstone (coated and uncoated), and 15% as constructional fill.**

SAND & GRAVEL

4.4 **Concreting aggregate** again proved to be the largest product for both land-won and marine-dredged **sand and gravel** used as aggregate, accounting for some **65%** and **78%** of the respective totals. The other main products were, other screened and graded gravels, construction fill and sand suitable for use in mortar.

CRUSHED ROCK

4.5 Crushed rock has a wider range of uses including as a source of both coarse and fine **concrete aggregate (18%)**, and for **construction fill (21%)**. However, the main use is in road construction, both unbound ('dry stone'), primarily for the foundations of roads, and bound with either bitumen (to produce 'coated roadstone') or cement as concrete aggregate, in the upper layers. Rocks with high skid resistant properties are required for the wearing course. **Coated roadstone and dry stone** represented the **largest crushed rock aggregate use at 52 Mt or 46%** of total aggregate sales. Of this total 19.3 Mt (17%) was sold as coated roadstone, a figure comparable with 1997. Other smaller specialist uses, include railway track ballast and armour stone.

NON-AGGREGATE USES

4.6 Although the data for non-aggregates uses (mainly limestone/dolomite and, to a lesser extent, chalk) are incomplete (see above), the most important

uses were cement manufacture, a flux in iron/steel making and agricultural use. Recorded **non-aggregate uses of crushed rock** were **17.2 Mt** in 2001, of which 82% and 16% were limestone/dolomite and chalk, respectively. The **East Midlands** accounted for **8.7 Mt** of the limestone/dolomite total.

4.7 Sales of sand and gravel for non-aggregate (industrial) uses were 3.8 Mt, almost all of which was produced in England. The North West was the major producing region, contributing 1.7 Mt.

5. INTER-REGIONAL FLOWS

5.1 The four yearly AM surveys are the only published source of information on aggregate sales by destination (Region). However, quarry operators cannot always be sure of where their product will be sold, particularly for 'collect' sales. Consequently it has not been possible to allocate all sales of primary aggregates to a definite regional destination. However, 'unallocated' sales of unknown destination are quite small (1 Mt) and this problem is much improved on the 1997 survey. This, in turn, provides more confidence in the figures for apparent consumption (see below).

5.2 Maps 6 and 7 illustrate the pattern of inter-regional flows for sand and gravel, and crushed rock aggregate, respectively. The statistical results of the destination survey are presented in Tables 3, 4a-k and 5a-k. Inter-regional flows of crushed rock are significantly larger than for sand and gravel because of the overall larger demand for crushed rock, particularly for roadstone, and because regions such as the South East, East of England and parts of the North West have only minor, or inferior, crushed rock resources. In addition, the consistency and extent of some hard rock deposits permits their working on a very large scale, enabling much wider geographical areas to be served economically by rail. The transfer of crushed rock between regions is, therefore, more complex and uneven than for sand and gravel. It reflects the combined pattern of the extent of crushed rock resources and markets/population (demand).

CRUSHED ROCK

5.3 Total exports from Wales to England were 5.7 Mt compared with **0.9 Mt** in the opposite direction. The traditionally large crushed rock producers, the **East Midlands, South West and North Wales**, have the largest exports representing **58% (18.3 Mt), 31% (8.2 Mt) and 48% (3.4 Mt)** of their respective total crushed rock sales. The main importing regions were **South East (12.7 Mt)**, mainly from East Midlands, and the **North West (9.1 Mt)** mainly from East Midlands and North Wales.

SAND & GRAVEL

5.4 In contrast, regional flows of sand and gravel were less than half that of crushed rock. **Total exports of sand and gravel from Wales to England were 0.5 Mt** compared with Welsh imports from England of **0.3 Mt**. The **leading exporters of sand and gravel were East of England (3.8 Mt), East Midlands (2.7 Mt) and South East (2 Mt)** and the **leading importing regions were London (2.8 Mt) and the South East (2.3 Mt)**.

5.5 In virtually all cases, marine sand and gravel was used within the region where it was landed. **South East dominates marine-dredged landings at**

7.2 Mt, with London at 3.7 Mt the second largest, followed by the East of England with 1.4 Mt.

5.6 In addition to inter-regional flows and material from conventional off-shore dredging, **a significant amount of crushed rock (4 Mt)** was imported from outside England and Wales, mainly from Scotland. The largest proportion (3.5 Mt) was landed in the South East. Sand and gravel imports from Scotland were negligible.

COMPARISON WITH 1997

5.7 Net imports from Wales to England increased from **4.7 Mt** in **1997** to **5 Mt** in **2001**. Imports of crushed rock from outside England and Wales, mainly Scotland, have increased from **2.7 Mt to 4 Mt**. Landings of marine-dredged sand and gravel has increased from **12.2 Mt to 15.6 Mt**.

6. CONSUMPTION

6.1 The AM survey is the only comprehensive measurement of apparent consumption of primary aggregates at regional level. Apparent consumption figures (Tables 2b and 5a-k and Map 5) are calculated from data on sales within each home region, plus imports from other regions and, where appropriate, imports from outside England and Wales (Scotland, Northern Ireland and Europe). The difference between the data for total sales and consumption (Table 1 and Map 9) is due to imports from outside England and Wales (mainly Scotland). In contrast to the AM97, unallocated sales were quite small and were only 1 Mt in total. Table D2 makes a comparison of consumption with all the previous AM surveys.

6.2 **Total recorded apparent consumption of primary aggregates was 196.4 Mt in England and Wales**, to which should be added **1 Mt** of unallocated sales to give 197.4 Mt. Four regions, East Midlands, South West, North Wales and South Wales were net exporters of aggregates and the remaining seven regions were net importers, to varying degrees. The **South East at 34.1 Mt** is the **largest consuming region**. Some 57% of this total relies upon land-won and marine-dredged sand and gravel, with the remainder largely comprising 7.8 Mt of limestone (mainly from the South West) and 4.7 Mt of igneous rock (including 1.3 Mt from the East Midlands and 3.2 Mt from outside England and Wales, mainly Scotland). The **South West (25.4 Mt)** is the second largest consuming region, followed by the **East Midlands (23.2 Mt)** and **North West (22.1 Mt)**. Excluding London, the **South East and North West** are the regions **most heavily dependent upon imports**.

COMPARISON WITH 1997

6.3 Compared with 1997 there has been an apparent significant increase in consumption from **180.6 Mt to 196.4 Mt**. However, a significant volume of 'unallocated sales' artificially depressed the figure for 1997 and overall consumption is believed to have increased only marginally.

7. MODE OF TRANSPORT

7.1 Table 8 shows the main mode of transport employed for the distribution of aggregate sales. Overall, **road** accounted for **90.8%** of all aggregates moved, **rail transport 8.1%** and shipment by **water** (excluding landings of marine-dredged sand and gravel, and imports into England and Wales) **1.1%**. The comparable proportions for 1997 were **94.5%, 5% and 0.5%**, respectively.

7.2 For crushed rock the proportion of rail deliveries increased to **13%** (**14.8 Mt**). The use of rail transport in the East Midlands and the South West accounted for **7 Mt and 6.6 Mt** of all aggregate rail forwardings respectively, the main destination being the South East. Rail was also used for transporting crushed rock in Yorkshire and the Humber, and North and South Wales. The principal transfers of crushed rock by water (sea) were from North Wales and South West to the South East. About **0.54 Mt** of sand and gravel were moved by inland waterways in the East Midlands.

8. RESERVES

8.1 Table 9 and Map 8 summarise reserves of primary aggregates with valid planning permissions at 31st December 2001 in active and inactive sites (i.e. 'permitted reserves'). Data for **inactive sites distinguishes between sites worked in the past, but still containing valid reserves, and sites where planning permission has been granted but extraction has not yet begun**. Reserves in sites classified as '**Dormant**' under the terms of the Planning & Compensation Act 1991 and the Environment Act 1995, are a subset of inactive sites worked in the past. Table D3 provides a comparison with all previous AM surveys.

8.2 A large proportion of the reserves data are based on information supplied by mineral operators (calculated by them using a variety of methods). The remaining reserve data were estimated by MPAs in the absence of returns (particularly in the case of inactive sites). Wherever possible estimates were based on earlier records (depleted for production), or upon more general knowledge of the site.

8.3 Total permitted reserves in active and inactive sites for both aggregate and non-aggregate use at the end of 2001 were **6,960 Mt** of which crushed rock accounted for **89%** (**6,176 Mt**) and sand and gravel the remaining **11%** (**783 Mt**). Permitted reserves show a **decrease of 314 Mt** on 1997 when total reserves were **7,274 Mt**, consisting of **6,353 Mt** of crushed rock and **921 Mt** of sand and gravel. Sand and gravel reserves are much smaller in relation to average annual land-won sales (equivalent to about 12 years output in 2001) than crushed rock reserves, which are usually measured in terms of a few decades (55 years in 2001).

8.4 Total permitted reserves in active sites at the end of 2001 were **5,544 Mt**, a decrease from **5,962 Mt** in 1997. In 2001 crushed rock accounted for **88.2%** and sand and gravel the remaining **11.8%** of reserves in active sites.

8.5 Total permitted reserves in inactive sites were 1,416 Mt, an increase of 102 Mt on 1997. This may reflect a more comprehensive coverage of inactive sites in the 2001 survey. Of the total in inactive sites **1,349 Mt** were in inactive sites worked in the past, and **67 Mt** in sites yet to be worked (greenfield sites). The latter consisted mainly of sand and gravel. Reserves contained in inactive sites classified as 'Dormant' were **611 Mt**, of which **582 Mt** consisted of crushed rock and **29 Mt** sand and gravel.

DISTRIBUTION

8.6 The distribution of reserves is very uneven reflecting broadly both geology and demand (Map 8). Of total reserves, **83% were in England**. Some

32% of all permitted reserves were located in the **East Midlands** (c.f. 21% of total sales), and **21%** in the **South West** (17% of total sales). These two regions also accounted for a significant proportion of total crushed rock reserves (**2,166 Mt or 35%**, and **1,386 Mt or 22%** respectively). Excluding London, the regions with the smallest crushed rock reserves were East of England (**15 Mt**) and the South East (**73 Mt**). This reflects the extent of crushed rock resources in the respective regions.

8.7 East of England was the region with the highest level of sand and gravel reserves (**185 Mt**) equivalent to **24%** of the sand and gravel total. Other English regions with significant sand and gravel reserves were the West Midlands (**144 Mt**), South East (**142 Mt**) and the East Midlands (**99 Mt**). Only **4%** (31 Mt) of total sand and gravel reserves were in Wales.

9. ENVIRONMENTALLY DESIGNATED AREAS

9.1 As in AM97, systematic information on aggregates sales and reserves in statutorily designated areas was collected and is presented in Tables 7 and 10 respectively. **Designated areas are not mutually exclusive.** For example, most SACs and SPAs are also SSSIs and all may occur in National Parks, AONBs and Green Belts. The latter are also included within AONBs. Consequently the different categories cannot be totalled. However, corresponding figures for ‘All Sites’ (land-won sites both in and outside such areas) are given to allow the figures to be placed in context.

9.2 Some designations, notably SSSIs, may only coincide with a small part of an extant mineral permission, which may, or may not, be active. The degree of overlap, and the actual or potential impacts of mineral extraction on the conservation interest, whether geological or biological, will vary and cannot be calculated or assumed from the figures presented. In addition, legal agreements may already exist which protect these designations from quarrying. The information, therefore, needs to be treated with caution.

SALES

9.3 Total sales of land-won sand and gravel in sites within National Parks and AONBs in England and Wales were **0.3 Mt** and **3.2 Mt** respectively. Comparable figures for crushed rock were **10.2 Mt** and **9.2 Mt**. In contrast, 16.5 Mt of sand and gravel output was obtained from sites within Green Belts compared with 11.7 Mt for crushed rock. Some **20% of total primary land-won aggregates** were produced from sites associated with SSSIs and such sites accounted for 30% of crushed rock aggregate sales.

9.4 At regional level, **41% (4.5 Mt) of crushed rock quarried in National Parks was produced in the East Midlands**, i.e. in the Peak District National Park (mainly limestone). Elsewhere, National Parks in Yorkshire & the Humber accounted for a further **39% (4.2 Mt)** of total crushed rock aggregate sales). The largest sales of crushed rock aggregates from AONBs (48%) came from the South West.

RESERVES

9.5 Total reserves of aggregate minerals in sites within National Parks (**551 Mt**) and AONBs (**719 Mt**), were **7.9%** and **10.3%** respectively of total

permitted reserves. Total reserves in National Parks and AONBs (**1,270 Mt**), have increased from **1,209 Mt** in 1997. Of total reserves (1,270 Mt), crushed rock reserves accounted for some 96%, reflecting the upland nature of these designations due to the presence of more resistant rock types. **Total reserves in Green Belts were 553 Mt**, comprising **218 Mt** of sand and gravel and **335 Mt** of crushed rock.

9.6 Total aggregate reserves in sites in part associated with **SSSIs** were **1,868 Mt or 27%** of the total for England and Wales. They consist almost entirely (96%) of crushed rock. However, in many cases only a small part of a mineral permission may occur within an SSSI, whilst reserves relate to the whole site permitted for extraction. These figures should, therefore, be treated with caution. The major proportion of permitted reserves associated with SSSIs is in those designated for their geological or geomorphological importance (Geological SSSIs).

10. SECONDARY AGGREGATES

10.1 The AM2001 survey was principally confined to primary aggregates, secondary aggregates being the subject of a separate survey by the Symonds Group. However, information on sales and reserves of china clay waste was collected, although these figures are not included with sales and reserves of primary aggregates.

10.2 The extraction and processing of china clay gives rise to large quantities of waste material, which comprises sand and rock waste. Total sales of china clay waste were 2.1 Mt, of which 1.3 Mt was china clay sand, the most important use of which was concreting sand. Almost all china clay waste is sold in the South West but some 33,000 tonnes was shipped to London and the South East.

10.3 The total industry stockpile of china clay waste is well over 600 Mt, but many waste tips have been restored and are not now available for extraction. Reserves of china clay waste that may be available for extraction are some 230 Mt.

11. PLANNING PERMISSIONS AND REFUSALS

11.1 Information has been collected on the numbers of sites granted and refused planning permission to supply wholly, or in part, aggregate minerals, and the amounts of mineral that these contained. Data are presented by site type, e.g. new quarry, borrow pit or extension (both lateral and vertical), and by environmental designation for the period 1998 to 2001.

11.2 'Permissions' issued under the terms of the Planning and Compensation Act 1991 (for IDO permissions) and the Environment Act 1995 (ROMPs) have not been included. Similarly 'permissions' given by way of an amendment to a condition, for example extending the time limit of an existing valid permission or an increase in output, are also not included. This is because in all these cases the permission did not provide additional reserves. Refusals of the above sites are also not included as the loss of the reserves, and also any reduction in reserves flowing from any modification of permission granted, are already incorporated in the figure for total permitted reserves.

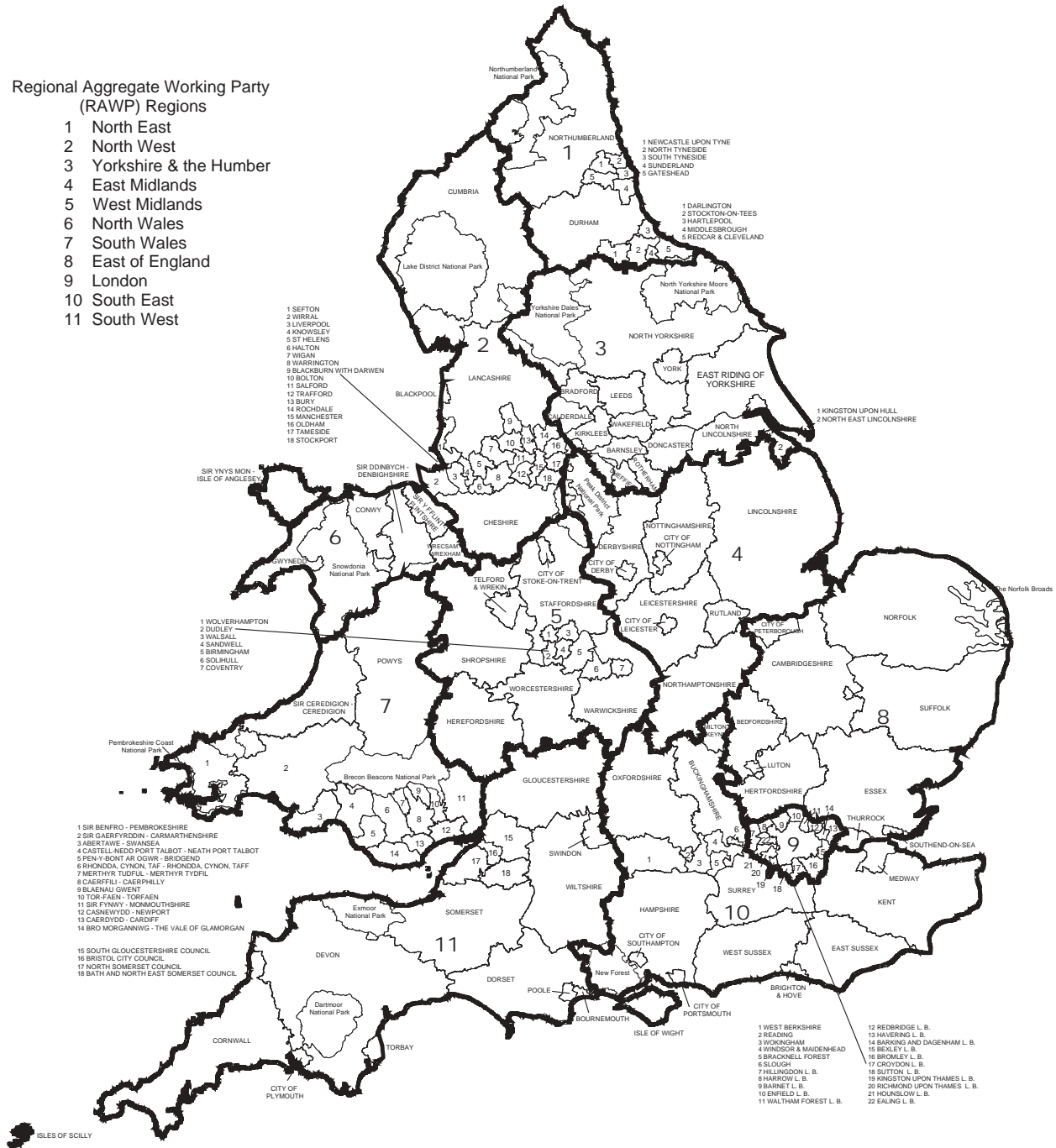
11.3 Tables 11 and 12 show the total number of **sites granted and refused planning permission by Region between 1998 and 2001, inclusive**, and the amounts of mineral they contained. **Permissions (283) greatly exceeded refusals (56). Total reserves of crushed rock granted planning permission between 1998 to 2001 were 406 Mt, of which 283 Mt were in England and 123 Mt in Wales.** The largest increases in reserves were in the South West (140 Mt) and South Wales (117 Mt), the former being dominated by one permission at Torr Works in Somerset (95 Mt). **Comparable figures for sand and gravel were 162 Mt in England and only 1.5 Mt in Wales.** The largest additions were in East of England (54 Mt), East Midlands (24.3 Mt), South East (24 Mt) and Yorkshire and the Humber (21 Mt).

11.4 The quantity of sand and gravel and crushed rock granted and refused planning permission by site type and designated area is shown in Tables C1 to C8 in Appendix C. The quantity of mineral granted and refused in National Parks and AONBs for the period 1998 to 2001 was 4.2 Mt and 7.4 Mt, respectively for crushed rock and 1.7 Mt and 0.9 Mt respectively for sand and gravel. The quantity of mineral granted and refused permission in relation to SSSIs was 39 Mt and zero, respectively, for crushed rock and 8.4 Mt and 0.055 Mt for sand and gravel.

MAP 1. MINERAL PLANNING AUTHORITIES AND RAWP REGIONS IN ENGLAND AND WALES, 2001

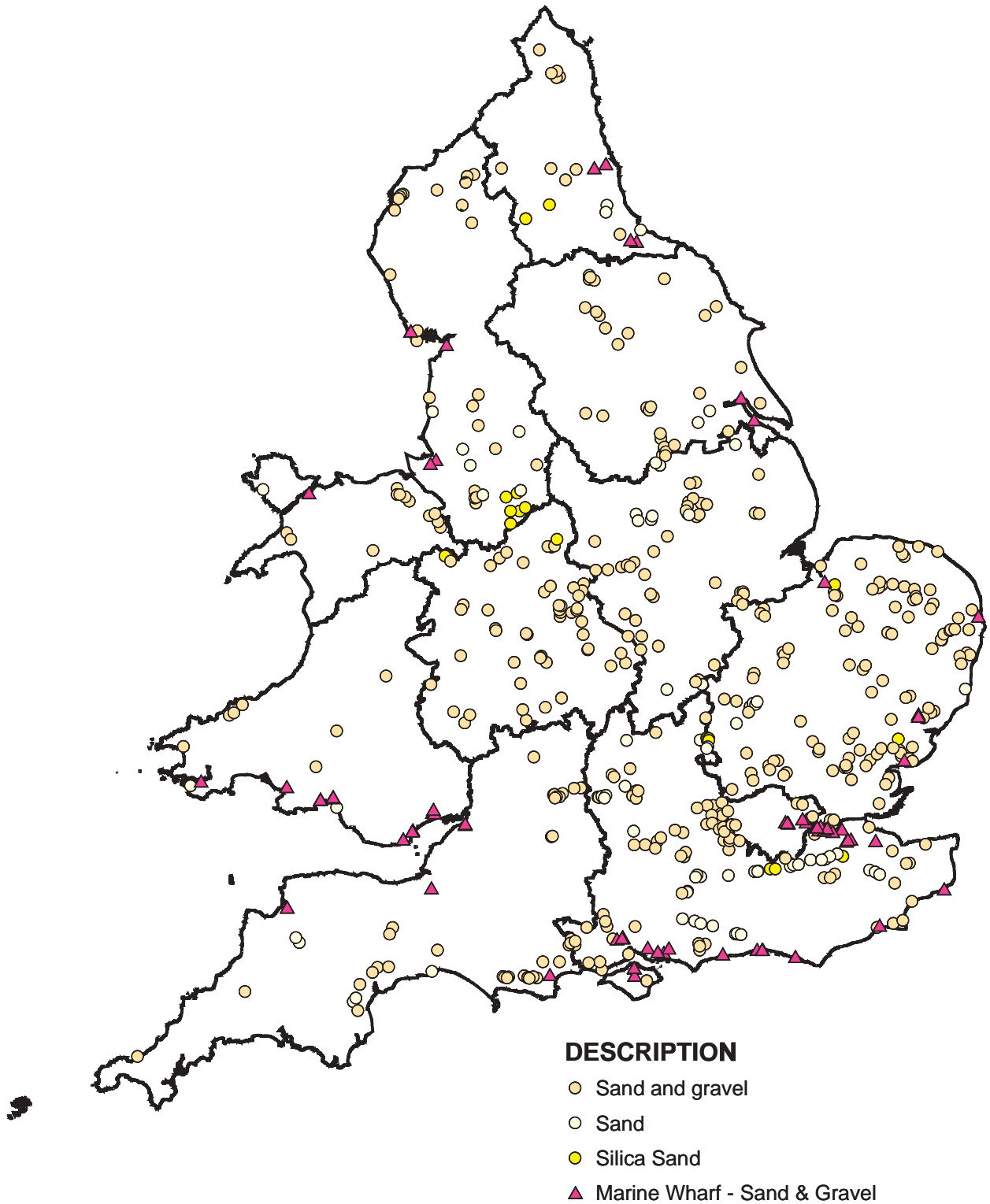
Regional Aggregate Working Party (RAWP) Regions

- 1 North East
- 2 North West
- 3 Yorkshire & the Humber
- 4 East Midlands
- 5 West Midlands
- 6 North Wales
- 7 South Wales
- 8 East of England
- 9 London
- 10 South East
- 11 South West



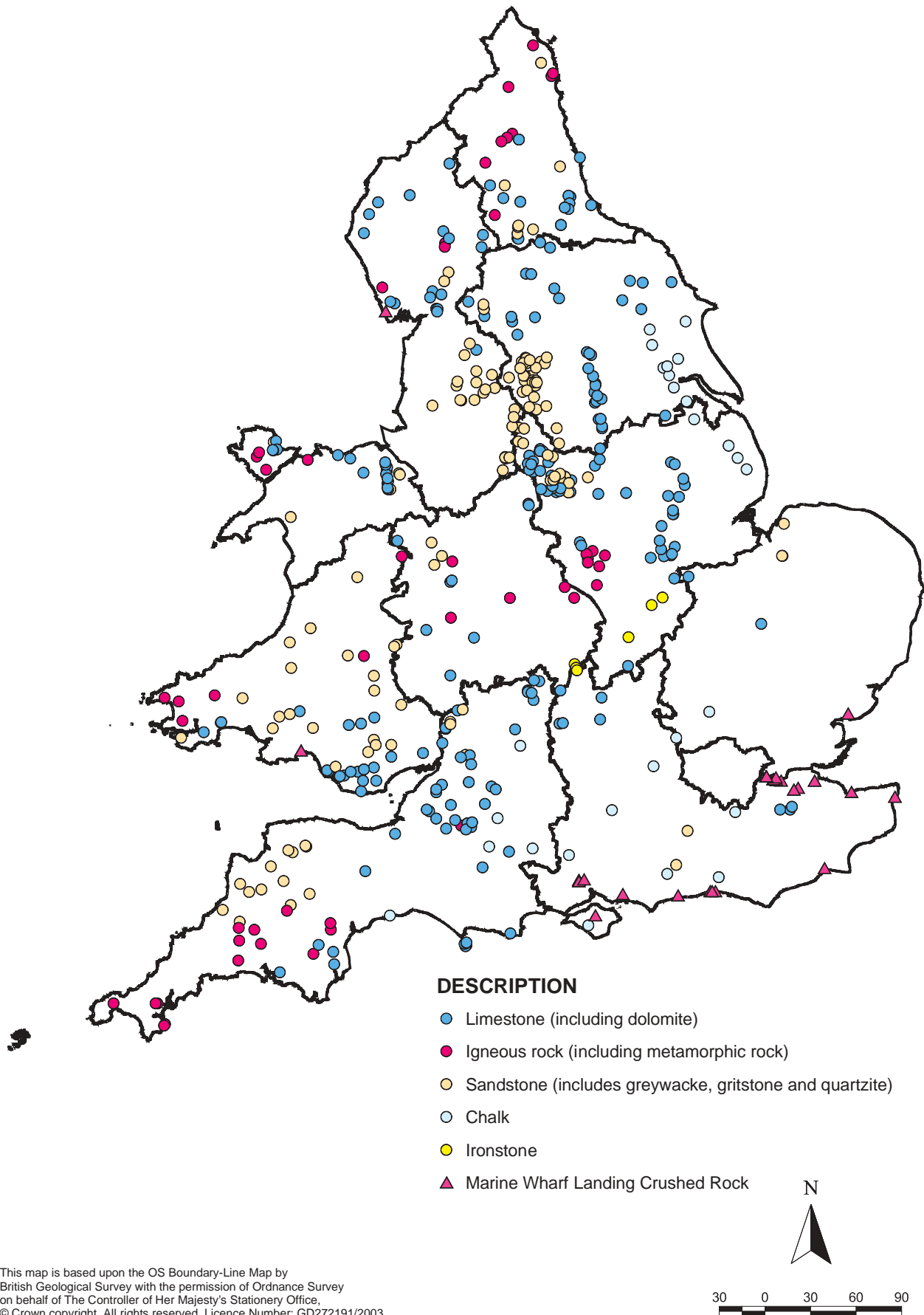
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MAP 2. LOCATION OF ACTIVE SAND AND GRAVEL QUARRIES INCLUDED IN THE SURVEY

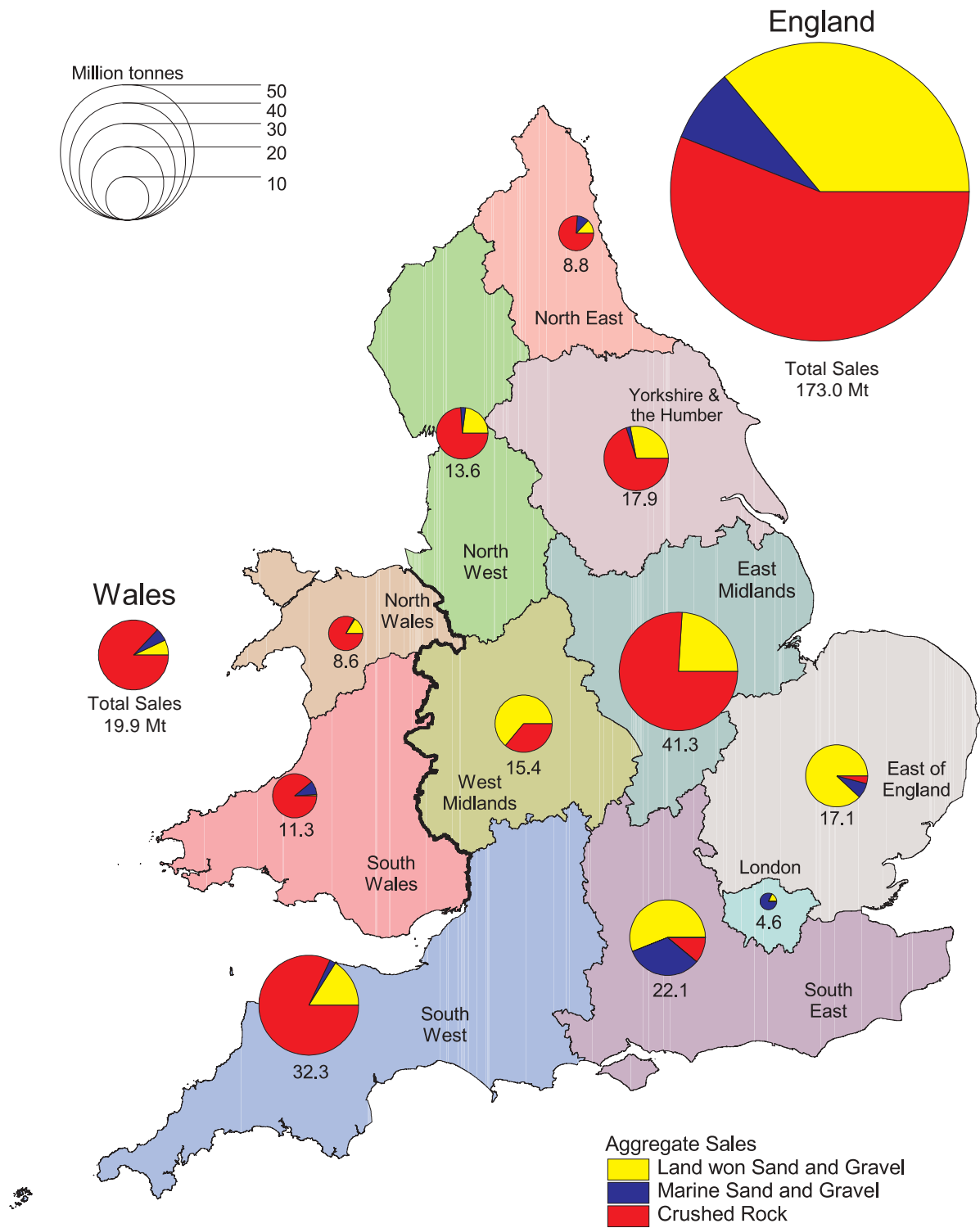


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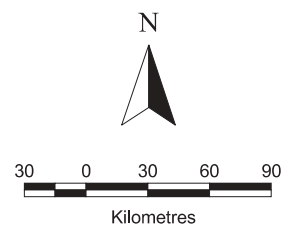
MAP 3. LOCATION OF ACTIVE CRUSHED ROCK QUARRIES INCLUDED IN THE SURVEY



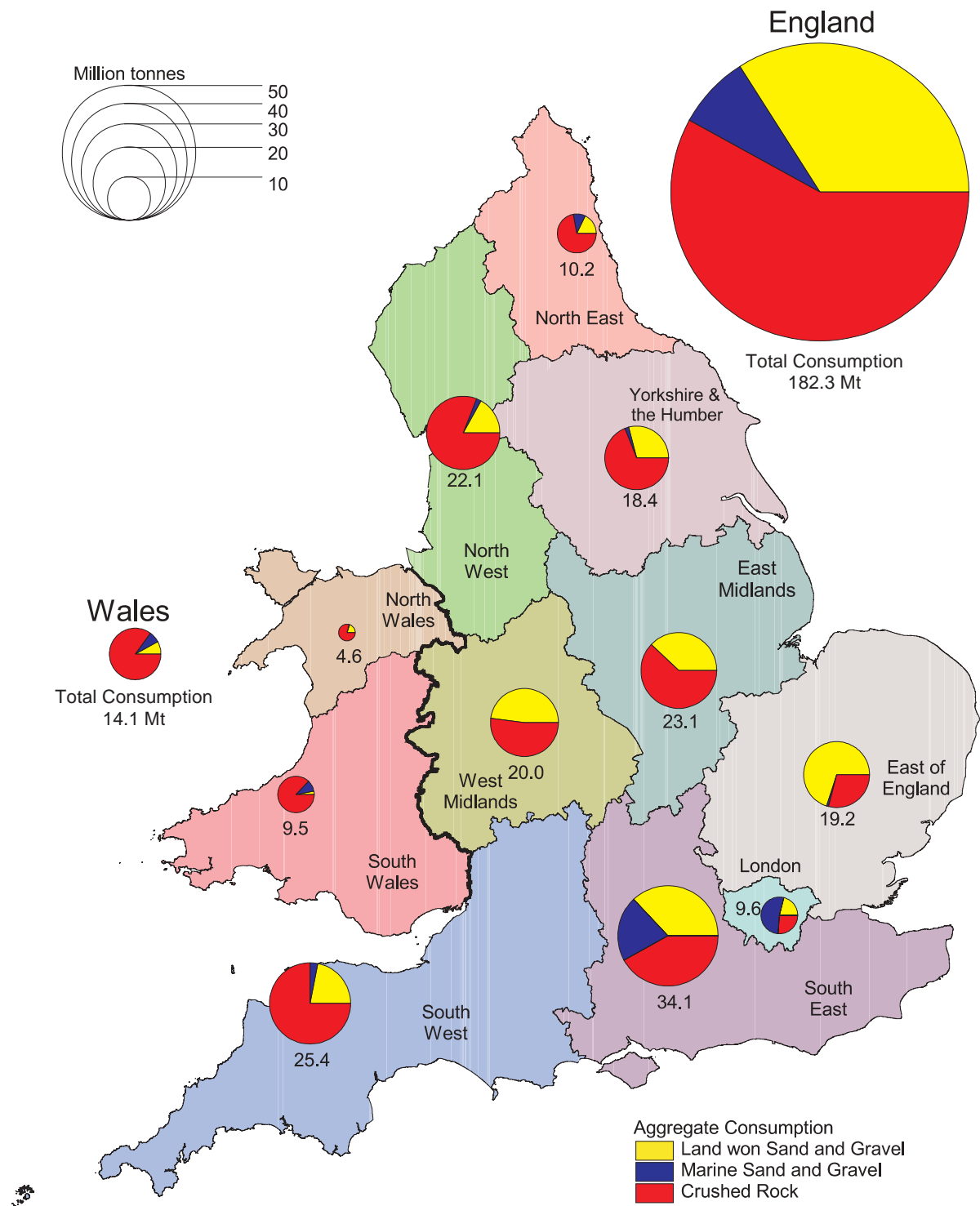
MAP 4. SALES OF SAND AND GRAVEL AND CRUSHED ROCK FOR AGGREGATES, 2001



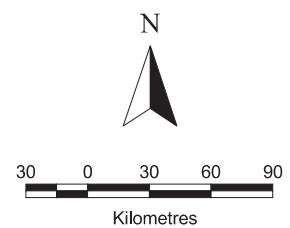
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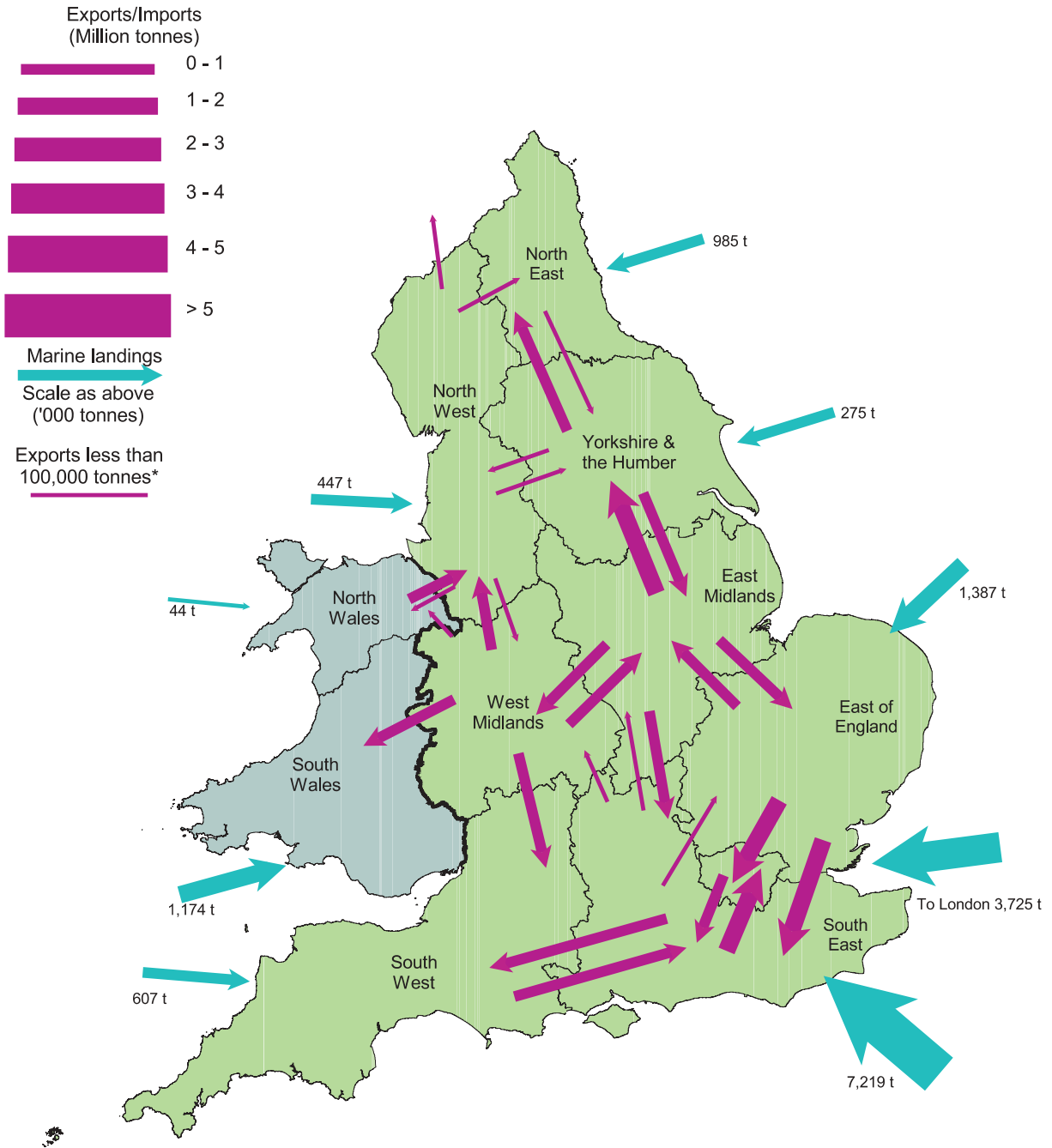
MAP 5. CONSUMPTION OF SAND AND GRAVEL AND CRUSHED ROCK FOR AGGREGATES, 2001



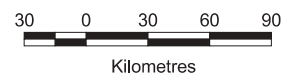
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MAP 6. SAND AND GRAVEL INTER-REGIONAL FLOWS, 2001

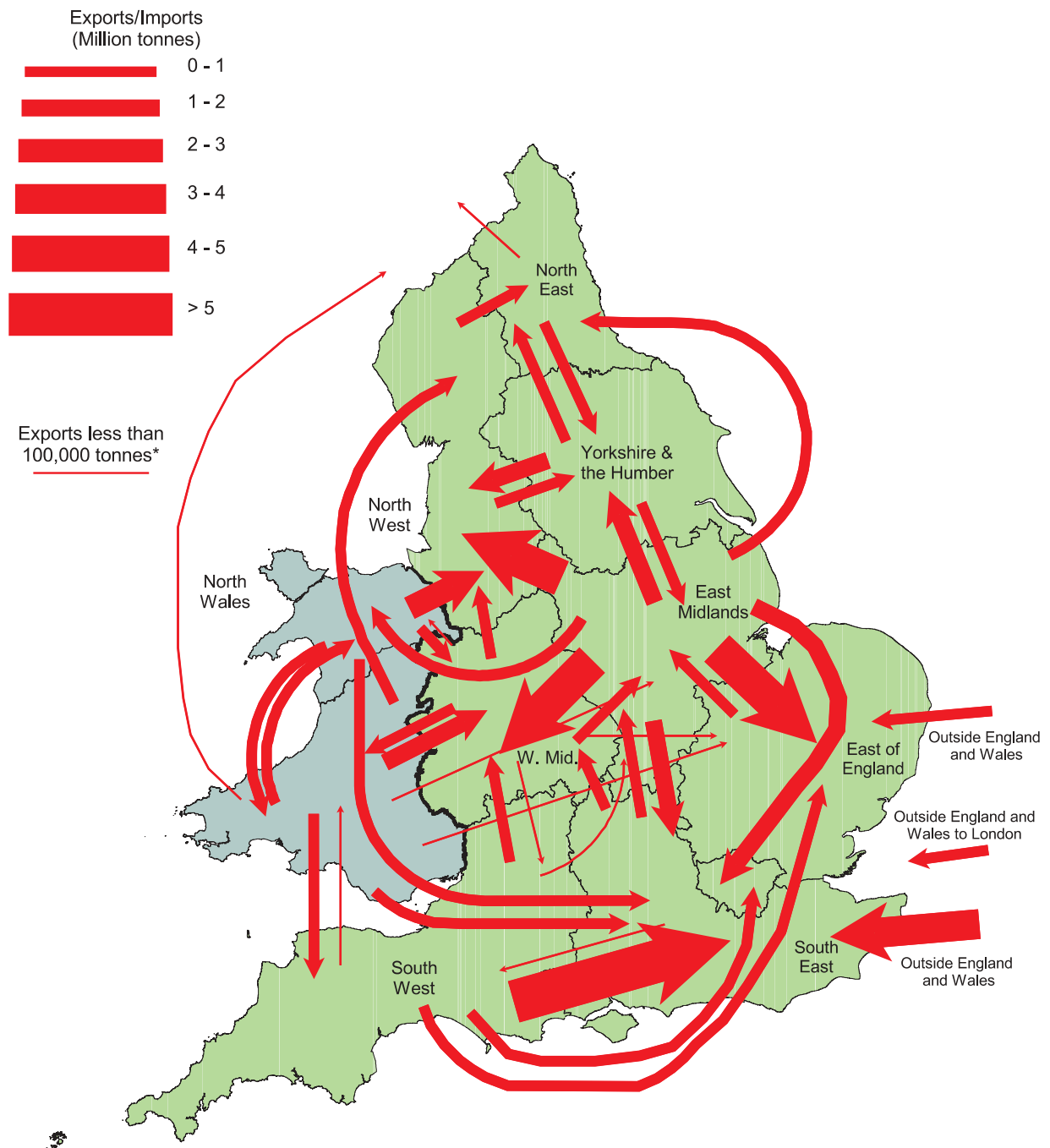


*For clarity, flows less than 25,000 tonnes are not shown.

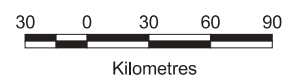


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MAP 7. CRUSHED ROCK INTER-REGIONAL FLOWS, 2001

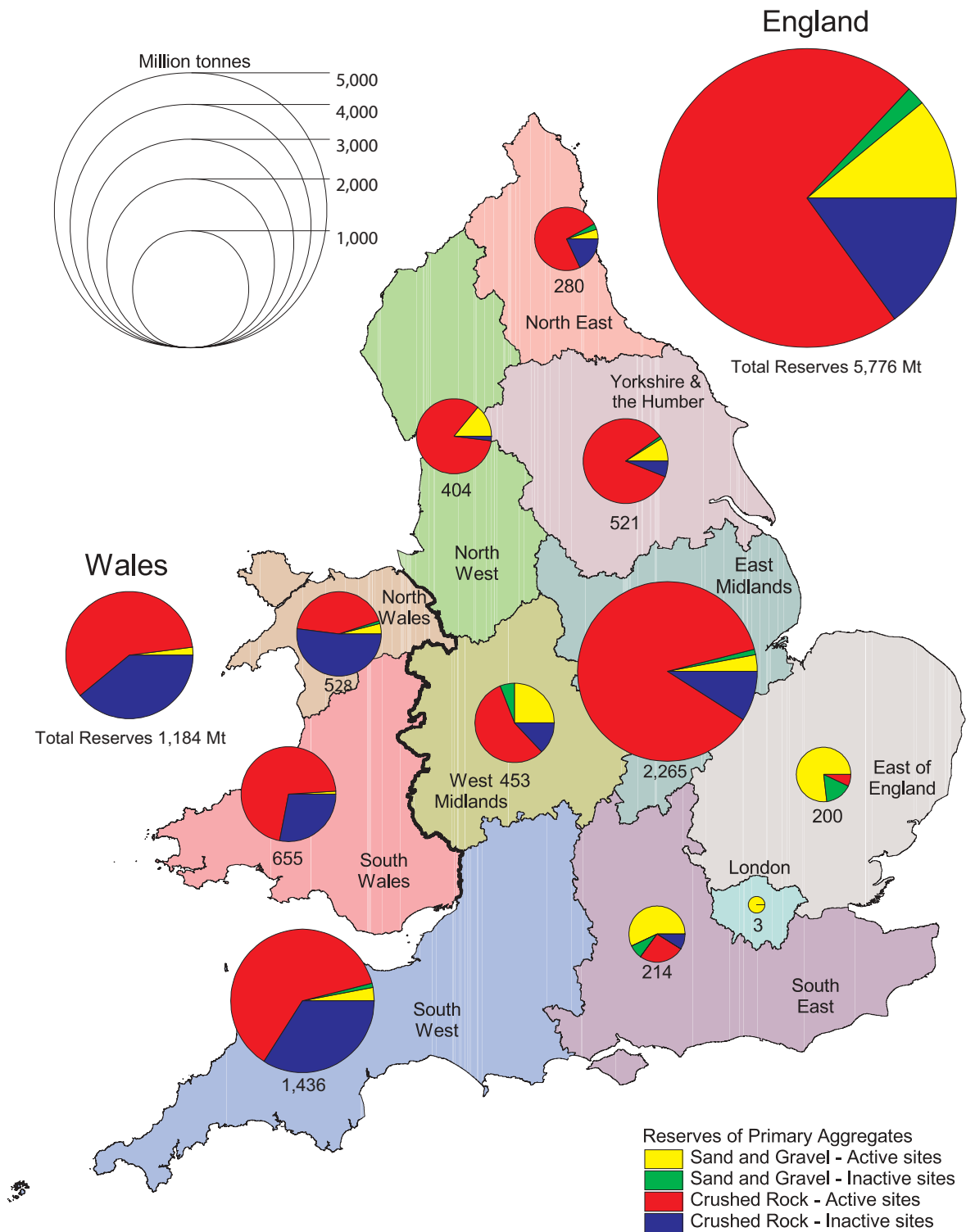


*For clarity, flows less than 25,000 tonnes are not shown.

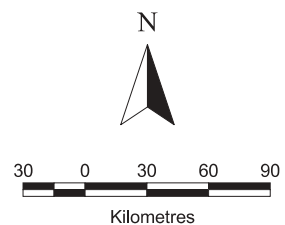


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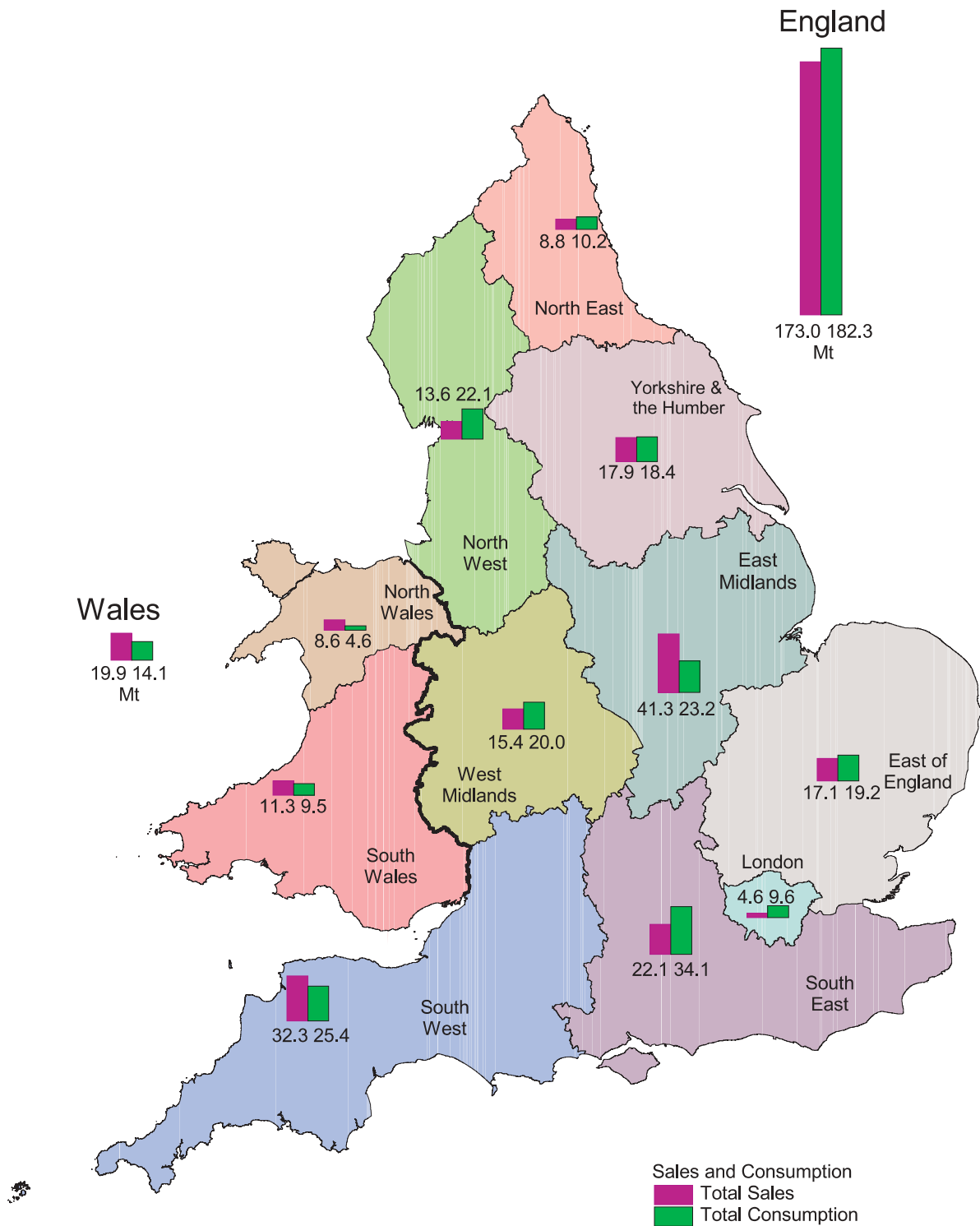
MAP 8. PERMITTED RESERVES OF PRIMARY AGGREGATE MINERALS IN ENGLAND AND WALES — ACTIVE AND INACTIVE SITES, 2001



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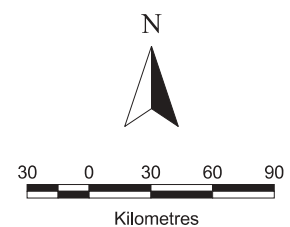


MAP 9. SALES AND CONSUMPTION OF PRIMARY AGGREGATES, 2001



*Figures for consumption are slightly underestimated because of the unknown destination of some sales (i.e. unallocated sales = c. 1Mt).

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General notes on the tables

A glossary of terms and abbreviations is provided as Appendix F. The following conventions have been used in the tables:

- '0' Figure is less than 500 tonnes for all sales and consumption information and less than 0.5 Mt for reserves data.
- ' ' A blank entry denotes a nil figure.
- 'c' Indicates a confidential figure. Totals include concealed confidential figures wherever possible.

Figures in the tables may not total fully due to rounding.

The rationale behind the presentation of tables is as follows:

Tables 1 to 3 provide a summary of the main findings of the survey in respect of primary aggregate sales, consumption and inter-regional flows.

Tables 4 and 5 present detailed sales (within and outside the Home Region) and consumption data for each Region.

Tables 6 to 8 present sales by major product, environmental designation and transport method.

Tables 9 and 10 present permitted reserves by site type (active/inactive) and environmental designation.

Tables 11 and 12 show total reserves granted and refused planning permission between 1998 and 2001 inclusive.

Tables A1 to A5 provide more detailed information on sales by product (end use) and mineral type.

Tables B1 to B4 provide more comprehensive data on permitted reserves.

Tables C1 to C8 provide details of planning permissions and refusals by site type and environmental designation.

Tables D1 to D3 provide comparison of sales, consumption and reserves for 1973, 1977, 1985, 1989, 1993, 1997 and 2001.

TABLE 1 COMPARISON OF SALES AND CONSUMPTION OF PRIMARY AGGREGATES IN 2001

Region	Sales Total primary aggregates (thousand tonnes)	Consumption Total primary aggregates (thousand tonnes)	Sales as % of consumption	Net imports as % of consumption	Net exports as % of sales
South West	32,309	25,404	127%	-	22%
South East	22,067	34,127	65%	36%	-
London	4,562	9,563	48%	53%	-
East of England	17,066	19,237	89%	9%	-
East Midlands	41,300	23,151	178%	-	44%
West Midlands	15,429	20,039	77%	23%	-
North West	13,578	22,139	61%	38%	-
Yorkshire & the Humber	17,913	18,407	97%	3%	-
North East	8,758	10,201	86%	10%	-
England	172,981	182,267	95%		
South Wales	11,310	9,482	119%	-	13%
North Wales	8,585	4,640	185%	-	42%
Wales	19,895	14,122	141%		
England and Wales	192,876	196,389	98%		

1. Total sales of primary aggregates include sales from land-based quarries and marine-dredged sand and gravel landings.

2. Consumption includes sales within Region, imports from others Regions and imports from outside England & Wales.

TABLE 2a SUMMARY SALES OF PRIMARY AGGREGATES IN 2001

Thousand tonnes

Region	Land-won sand and gravel	Marine sand and gravel	Total sand and gravel	Crushed rock	Total primary aggregate
South West	5,184	607	5,791	26,518	32,309
South East	12,450	7,219	19,669	2,398	22,067
London	837	3,725	4,562		4,562
East of England	15,025	1,387	16,412	655	17,066
East Midlands	10,046		10,046	31,254	41,300
West Midlands	9,932		9,932	5,497	15,429
North West	3,097	447	3,544	10,034	13,578
Yorkshire & the Humber	4,936	275	5,211	12,701	17,913
North East	1,177	985	2,162	6,596	8,758
England	62,684	14,644	77,328	95,653	172,981
(%)	98%	92%	97%	85%	90%
South Wales	115	1,174	1,289	10,021	11,310
North Wales	1,342	44	1,387	7,198	8,585
Wales	1,458	1,218	2,676	17,219	19,895
(%)	2%	8%	3%	15%	10%
England and Wales	64,141	15,862	80,004	112,872	192,876

1. For aggregate use only.

2. In addition, total sales of china clay waste (sand and crushed rock) for the South West were 2,114,000 tonnes. Most was used as a source of concreting sand.

TABLE 2b SUMMARY OF CONSUMPTION OF PRIMARY AGGREGATES IN 2001

Thousand tonnes

Region	Land-won sand and gravel	Marine sand and gravel	Total sand and gravel	Crushed rock	Total primary aggregate
South West	5,604	659	6,263	19,140	25,404
South East	12,488	7,036	19,524	14,603	34,127
London	2,021	5,090	7,110	2,453	9,563
East of England	13,404	153	13,557	5,680	19,237
East Midlands	8,703		8,703	14,448	23,151
West Midlands	9,564	1	9,564	10,475	20,039
North West	3,656	425	4,081	18,058	22,139
Yorkshire & the Humber	5,337	277	5,614	12,793	18,407
North East	1,826	982	2,808	7,392	10,201
England	62,602	14,622	77,225	105,042	182,267
(%)	98%	94%	97%	90%	93%
South Wales	283	915	1,198	8,284	9,482
North Wales	909	68	977	3,663	4,640
Wales	1,191	983	2,175	11,947	14,122
(%)	2%	6%	3%	10%	7%
England and Wales	63,794	15,606	79,399	116,990	196,389

1. For aggregate use only.

2. The figure for total consumption slightly under estimates true consumption because for some regions unallocated sales have an unknown destination.

3. Total unallocated sales = Sand and gravel 643,395 tonnes
Crushed rock 377,473 tonnes

TABLE 3 SUMMARY OF INTER-REGIONAL FLOWS OF PRIMARY AGGREGATES (LAND-WON AND MARINE) IN 2001

Thousand tonnes

Region	Exports		Imports	
	Sand and gravel	Crushed rock	Sand and gravel	Crushed rock
South West	343	8,197	982	481
South East	2,015	537	2,255	12,742
London	182		2,790	2,453
East of England	3,759	120	644	5,047
East Midlands	2,700	18,277	1,357	1,541
West Midlands	1,059	1,290	691	6,325
North West	454	1,117	901	9,141
Yorkshire & the Humber	1,257	2,585	1,660	2,677
North East	134	464	780	818
England	11,902	32,586	12,061	41,223
South Wales	2	2,302	195	626
North Wales	545	3,435	135	279
Wales	547	5,737	330	905
England and Wales	12,449	38,323	12,390	42,128

1. Sand and gravel includes marine dredged.
2. Exports and imports do not include small quantities of unallocated sales.
3. Exports include minor quantities to areas outside England & Wales.
4. Imports of crushed rock include figures for outside England & Wales.

TABLE 4a SALES OF AGGREGATES AND AGGREGATE MINERALS IN 2001 BY REGION: SOUTH WEST

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel	Land won	67	5,251
	Marine dredged		607
	Total	67	5,857
Crushed Rock	Limestone/dolomite	597	23,773
	Igneous rock	15	2,663
	Sandstone	17	711
	Chalk	c	c
	Ironstone		
Total	629	27,146	
Total Aggregates	32,309	695	33,004
Percent	98%	2%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region													
			Total sales	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Scotland	Europe	
Sand and Gravel	Land won	257	343	331					5			7				
	Marine dredged	607														
	Total	257	343	331					5			7				
Crushed Rock	Limestone/dolomite	51	7,865	6,435	549			260							98	48
	Igneous rock	c	2,323	180	70	c	c	c								
	Sandstone	686		8	5						3					
	Chalk	c														
	Ironstone															
Total	51	18,660	8,198	6,620	618	c	c	260	3	260	3	7	98	98	48	
Total Aggregates	309	23,941	8,542	6,951	619	c	c	265	3	265	3	7	98	98	48	

1. An additional 2,114,000 tonnes of china clay waste were produced in the South West. Most was used as a source of concreting sand.

2. Sales to Europe were to the Channel Islands.

3. Limestone/dolomite includes a small quantity of chalk and igneous rock to maintain confidentiality.

TABLE 4b SALES OF AGGREGATES AND AGGREGATE MINERALS IN 2001 BY REGION: SOUTH EAST

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel			
Land won	12,450	853	13,303
Marine dredged	7,219		7,219
Total	19,669	853	20,522
Crushed Rock			
Limestone/dolomite	1,833	42	1,875
Igneous rock			
Sandstone	71	1	72
Chalk	36	42	77
Ironstone	458	1	459
Total	2,398	86	2,484
Total Aggregates	22,067	939	23,006
Percent	96%	4%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region													
			Total sales	South West	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	Scotland	Europe		
Sand and Gravel																
Land won	10,233	385	1,832	696	1,038	25	25	39	9							
Marine dredged	7,035		184	52	132	0										
Total	17,269	385	2,015	748	1,169	25	25	39	9							
Crushed Rock																
Limestone/dolomite	1,755		79	43			36									
Igneous rock																
Sandstone	71															
Chalk	36															
Ironstone	0		458				122	336								
Total	1,861		537	43			158	336								
Total Aggregates	19,130	385	2,552	791	1,169	25	183	375	9							

TABLE 4c SALES OF AGGREGATES AND AGGREGATE MINERALS IN 2001 BY REGION: LONDON

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel	Land won	837	837
	Marine dredged	3,725	3,725
	Total	4,562	4,562
Crushed Rock	Limestone/dolomite		
	Igneous rock		
	Sandstone		
	Chalk		
	Ironstone		
	Total		
Total Aggregates	4,562		4,562
Percent	100%		100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region													
			Total sales	South West	South East	England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Scotland	Europe	
Sand and Gravel	Land won	596	182													
	Marine dredged	3,725														
	Total	4,320	182													
Crushed Rock	Limestone/dolomite															
	Igneous rock															
	Sandstone															
	Chalk															
	Ironstone															
	Total															
Total Aggregates	4,320	182	182													

TABLE 4d SALES OF AGGREGATES AND AGGREGATE MINEALS IN 2001 BY REGION: EAST OF ENGLAND

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel	Land won	487	15,512
	Marine dredged		1,387
	Total	487	16,899
Crushed Rock	Limestone/dolomite	0	294
	Igneous rock		
	Sandstone		361
	Chalk	160	160
	Ironstone		
	Total	161	815
Total Aggregates	17,066	648	17,714
Percent	96%	4%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region												
			Total sales	South West	South East	London	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Scotland	Europe
Sand and Gravel	Land won	1	2,524	15	1,603	387	472	46	0	0	0	0	0	0	1
	Marine dredged		1,233			1,233									
	Total	1	3,758	15	1,603	1,621	472	46	0	0	0	0	0	0	1
Crushed Rock	Limestone/dolomite		114				114								
	Igneous rock														
	Sandstone		3			3									
	Chalk		3	3											
	Ironstone														
	Total		120	3	117	589	46	0	0	0	0	0	0	0	1
Total Aggregates	1	13,546	15	1,606	1,621	589	46	0	0	0	0	0	0	1	

TABLE 4e SALES OF AGGREGATES AND AGGREGATE MINEALS IN 2001 BY REGION: EAST MIDLANDS

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel			
Land won	10,046	209	10,256
Marine dredged			
Total	10,046	209	10,256
Crushed Rock			
Limestone/dolomite	16,362	8,704	25,066
Igneous rock	14,357	2	14,359
Sandstone	165	101	266
Chalk	370	67	438
Ironstone			
Total	31,254	8,875	40,128
Total Aggregates	41,300	9,084	50,384
Percent	82%	18%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region																
			Total sales	South West	South East	London	East of England	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Scotland	Europe				
Sand and Gravel																			
Land won	7,346				613	480	4	1,487											
Marine dredged																			
Total	7,346			613	480	4	1,487												
Crushed Rock																			
Limestone/dolomite	6,603	32		1,224	2,045	4,729	1,185												
Igneous rock	5,927			2,921	2,196	53	274												
Sandstone	51					114													
Chalk	326			20															
Ironstone																			
Total	12,907	32		4,165	4,241	4,896	1,483												
Total Aggregates	20,253	32		4,778	4,721	4,900	2,970												

TABLE 4f SALES OF AGGREGATES AND AGGREGATE MINERALS IN 2001 BY REGION: WEST MIDLANDS

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel			
Land won	9,932	366	10,298
Marine dredged			
Total	9,932	366	10,298
Crushed Rock			
Limestone/dolomite	2,605	172	2,778
Igneous rock	1,775	1	1,776
Sandstone	1,117	0	1,117
Chalk			
Ironstone	C	C	C
Total	5,497	174	5,671
Total Aggregates	15,429	540	15,969
Percent	97%	3%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region														
			Total sales	South West	South West	London	East of England	East Midlands	North West	North East	Yorkshire & Humber	North Wales	South Wales	Scotland	Europe		
Sand and Gravel																	
Land won	8,873		1,059	203	21	21	0	0	302	338	6	0	0	142	47	0	
Marine dredged																	
Total	8,873		1,059	203	21	21	0	302	338	6	0	0	142	47	0		
Crushed Rock																	
Limestone/dolomite	1,964	57	585	87	5	5	0	118	74	10			290		1		
Igneous rock	1,657	1	116	1	1	1	22	92					0		0		
Sandstone	529		587	5	1	1	19	308	219	1	1	1	0	33			
Chalk																	
Ironstone	C	C															
Total	4,150	58	1,290	93	7	0	41	519	293	11	1	1	291	33	1		
Total Aggregates	13,023	58	2,348	296	28	0	41	821	630	17	1	1	433	80	1		

1. Sales of limestone/dolomite include a small quantity of ironstone.

TABLE 4g SALES OF AGGREGATES AND AGGREGATE MINEALS IN 2001 BY REGION: NORTH WEST

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel	Land won	1,694	4,791
	Marine dredged	2	449
	Total	1,696	5,240
Crushed Rock	Limestone/dolomite	1,179	6,721
	Igneous rock	6	701
	Sandstone	21	3,819
	Chalk		
	Ironstone		
Total	1,206	11,240	
Total Aggregates	13,578	2,903	16,480
Percent	82%	18%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region												
			Total sales	South West	South East	London	East of England	East Midlands	West Midlands	Yorkshire & Humber	North East	South Wales	North Wales	Scotland	Europe
Sand and Gravel	Land won	2,754	430	15	0	0	0	6	23	88	80	97	25	62	34
	Marine dredged	425	24											24	
	Total	3,179	454	15	0	0	0	6	23	88	80	97	25	86	34
Crushed Rock	Limestone/dolomite	5,455	86	0				1	1	2	24	48	3	8	
	Igneous rock	695													
	Sandstone	2,767	1,031								937	94			
	Chalk														
	Ironstone														
Total	8,917	1,117	0	0	0	0	6	1	24	2	961	142	3	8	
Total Aggregates	12,096	1,569	15	0	0	0	6	24	90	1,041	238	25	88	42	

TABLE 4h SALES OF AGGREGATES AND AGGREGATE MINEALS IN 2001 BY REGION: YORKSHIRE AND THE HUMBER

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel			
Land won	4,936	29	4,965
Marine dredged	275		275
Total	5,211	29	5,241
Crushed Rock			
Limestone/dolomite	10,718	519	11,237
Igneous rock			
Sandstone	1,543	106	1,649
Chalk	441	2,441	2,882
Ironstone			
Total	12,701	3,066	15,767
Total Aggregates	17,913	3,095	21,008
Percent	85%	15%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region													
			Total sales	South West	South East	London	East of England	East Midlands	West Midlands	North West	North East	South Wales	North Wales	Scotland	Europe	
Sand and Gravel																
Land won	3,679		1,257						530	14	36	677				0
Marine dredged	275															
Total	3,954		1,257					530	14	36	677				0	
Crushed Rock																
Limestone/dolomite	8,576		2,142	0	0	0	0	484	1	1,149	508	0				
Igneous rock																
Sandstone	1,144		398	0	0	1	1	56	15	298	27	0				
Chalk	397		44				6	38								
Ironstone																
Total	10,117		2,584	0	1	1	8	578	15	1,446	535	0				
Total Aggregates	14,071		3,841	0	1	1	8	1,108	29	1,482	1,212	0				0

TABLE 4i SALES OF AGGREGATES AND AGGREGATE MINEALS IN 2001 BY REGION: NORTH EAST

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel	Land won		1,177
	Marine dredged		985
	Total		2,162
Crushed Rock	Limestone/dolomite	962	5,228
	Igneous rock	2	2,330
	Sandstone	13	14
	Chalk		
	Ironstone		
Total	977	7,573	
Total Aggregates	8,758	977	9,734
Percent	90%	10%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region													
			Total sales	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	South Wales	North Wales	Scotland	Europe	
Sand and Gravel	Land won	1,046	133		3				5	3	13	85			24	
	Marine dredged	982	2	0								2				
	Total	2,028	135	0	3	5	13	87	5	3	13	87	24			
Crushed Rock	Limestone/dolomite	4,586	148					0	3	38				87		20
	Igneous rock	1,977	315	1	1	5	2	93	4	16	180		5	8		
	Sandstone	11	0					0								
	Chalk															
	Ironstone															
Total	6,574	464	1	1	5	2	94	4	19	218	5	95	20			
Total Aggregates	8,602	598	1	3	5	2	99	7	32	305	5	119	20			

TABLE 4J SALES OF AGGREGATES AND AGGREGATE MINERALS IN 2001 BY REGION: SOUTH WALES

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel			
Land won	115		115
Marine dredged	1,174	16	1,190
Total	1,289	16	1,305
Crushed Rock			
Limestone/dolomite	6,536	1,344	7,879
Igneous rock	838	1	839
Sandstone	2,648	10	2,658
Chalk			
Ironstone			
Total	10,021	1,355	11,376
Total Aggregates	11,310	1,371	12,681
Percent	89%	11%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region														
			Total sales	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	North Wales	Scotland	Europe		
Sand and Gravel																	
Land won	88		1														
Marine dredged	915		1	0						1							
Total	1,003		2	0						1							1
Crushed Rock																	
Limestone/dolomite	5,934		262	49	23	0				157							33
Igneous rock	268		572	6	9	1	9	8		295	115						129
Sandstone	1,457		1,467	268	172	52	53	36		851	22			3	10		0
Chalk																	
Ironstone																	
Total	7,658		2,302	324	204	52	62	44	44	1,303	137	3	10	3	10	130	33
Total Aggregates	8,661		2,303	324	204	52	62	44	44	1,303	137	3	10	3	10	131	33
																	0
																	0

TABLE 4k SALES OF AGGREGATES AND AGGREGATE MINEALS IN 2001 BY REGION: NORTH WALES

Thousand tonnes

Aggregate mineral	Aggregates	Non-aggregates	Total
Sand and Gravel			
Land won	1,342	59	1,401
Marine dredged	44		44
Total	1,387	59	1,446
Crushed Rock			
Limestone/dolomite	6,062	595	6,657
Igneous rock	1,136	6	1,142
Sandstone			
Chalk			
Ironstone			
Total	7,198	601	7,800
Total Aggregates	8,585	660	9,245
Percent	93%	7%	100%

SALES OF AGGREGATES WITHIN AND OUTSIDE HOME REGION

Thousand tonnes

Aggregate mineral	Sales of aggregates within home region	Un-allocated sales	Sales of aggregates outside home region														
			Total sales	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	Scotland	Europe		
Sand and Gravel																	
Land won	798		544	0	0	0	0	0	0	17	510	0	0	0	17		
Marine dredged	44																
Total	842		544	0	0	0	0	0	0	17	510	0	0	0	17		
Crushed Rock																	
Limestone/dolomite	2,573	236	3,344	0	662	0	0	0	0	124	2,298	0	0	0	232		28
Igneous rock	812		91							39	49				3		
Sandstone																	
Chalk																	
Ironstone																	
Total	3,384	236	3,436	0	662	0	0	0	0	164	2,347	0	0	235		28	
Total Aggregates	4,226	236	3,980	0	662	0	1	0	1	181	2,857	0	0	251		28	

TABLE 5a CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: SOUTH WEST

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
Sand and Gravel			
Land won	930	4,675	5,604
Marine dredged	52	607	659
Total	982	5,281	6,263
Crushed Rock			
Limestone/dolomite	181	15,650	15,831
Igneous rock	26	2,323	2,349
Sandstone	274	686	960
Chalk		C	C
Ironstone			
Total	481	18,660	19,140
Total Aggregates	1,462	23,941	25,404
Percent	6%	94%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: SOUTH WEST

Thousand tonnes

Aggregate mineral	Total	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Outside England & Wales
Sand and Gravel												
Land won	930	696		15	0	203	15				0	
Marine dredged	52	52						0	0	0		
Total	982	748		15	0	203	15	0	0	0	0	
Crushed Rock												
Limestone/dolomite	181	43		1	87	0	0	0		49	0	
Igneous rock	26			9	1			1		6		9
Sandstone	274				5					268		
Chalk												
Ironstone												
Total	481	43		10	93	0	0	0	1	324	0	9
Total Aggregates	1,462	791		15	296	15	15	0	1	324	0	9

1. An additional 2,071,000 tonnes of china clay waste were consumed in the South West.

2. Limestone/dolomite includes a small amount of chalk to maintain confidentiality.

TABLE 5b CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: SOUTH EAST

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
Sand and Gravel			
Land won	2,255	10,233	12,488
Marine dredged	0	7,035	7,036
Total	2,255	17,269	19,524
Crushed Rock			
Limestone/dolomite	7,809	1,755	9,564
Igneous rock	4,725		4,725
Sandstone	204	71	275
Chalk	3	36	39
Ironstone		0	0
Total	12,742	1,861	14,603
Total Aggregates	14,997	19,130	34,127
Percent	44%	56%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: SOUTH EAST

Thousand tonnes

Aggregate mineral	Total	South West	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Outside England & Wales
Sand and Gravel												
Land won	2,255	331	182	1,603	114	21	0	3				
Marine dredged	0	0										
Total	2,255	331	182	1,603	114	21	0	3				
Crushed Rock												
Limestone/dolomite	7,809	6,435		431	5	0				23	662	254
Igneous rock	4,725	180		1,296	1			1		9		3,239
Sandstone	204	5			1					172		26
Chalk	3			3								
Ironstone												
Total	12,742	6,620	182	1,727	7	1	0	1	1	204	662	3,519
Total Aggregates	14,997	6,951	182	1,606	28	1	0	1	3	204	662	3,519

TABLE 5c CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: LONDON

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
Sand and Gravel	Land won	596	2,021
	Marine dredged	3,725	5,090
	Total	4,320	7,110
Crushed Rock	Limestone/dolomite	552	552
	Igneous rock	1,847	1,847
	Sandstone	54	54
	Chalk		
	Ironstone		
Total	2,453	2,453	
Total Aggregates	5,243	4,320	9,563
Percent	55%	45%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: LONDON

Thousand tonnes

Aggregate mineral	Total	South West	South East	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Outside England & Wales
Sand and Gravel	Land won	1,425	0	1,038	387	0	0					
	Marine dredged	1,365		132	1,233							
	Total	2,790	0	1,169	1,621	0	0					
Crushed Rock	Limestone/dolomite	552	549		3							
	Igneous rock	1,847	70		1,513			5	1	1		259
	Sandstone	54				0		1		52		
	Chalk											
	Ironstone											
Total	2,453	618	1,169	1,516	0	0	1	1	5	52	1	259
Total Aggregates	5,243	619	1,169	1,621	1,516	0	0	1	5	52	1	259

TABLE 5d CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: EAST OF ENGLAND

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
Sand and Gravel			
Land won	644	12,760	13,404
Marine dredged	0	153	153
Total	644	12,913	13,557
Crushed Rock			
Limestone/dolomite	1,845	180	2,025
Igneous rock	3,102		3,102
Sandstone	74	358	431
Chalk	26	95	121
Ironstone			
Total	5,047	633	5,680
Total Aggregates	5,691	13,546	19,237
Percent	30%	70%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: EAST OF ENGLAND

Thousand tonnes

Aggregate mineral	Total	South West	South East	London	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Outside England & Wales
Sand and Gravel												
Land won	644	0	25		613	0	6				0	
Marine dredged	0		0									
Total	644	0	25		613	0	6				0	
Crushed Rock												
Limestone/dolomite	1,845				1,224	0		0		0	0	144
Igneous rock	3,102				2,921	22			2	9		105
Sandstone	74					19		1		53		
Chalk	26				20			6				
Ironstone												
Total	5,047	c	c		4,165	41		8	2	62	0	249
Total Aggregates	5,691	c	25		4,778	41	6	8	2	62	0	249

TABLE 5e CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: EAST MIDLANDS

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
Sand and Gravel			
Land won	1,357	7,346	8,703
Marine dredged			
Total	1,357	7,346	8,703
Crushed Rock			
Limestone/dolomite	753	6,603	7,356
Igneous rock	224	5,927	6,150
Sandstone	404	51	455
Chalk	38	326	364
Ironstone	122		122
Total	1,541	12,907	14,448
Total Aggregates	2,898	20,253	23,151
Percent	13%	87%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: EAST MIDLANDS

Thousand tonnes

Aggregate mineral	Total	South West	South East	London	East of England	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Outside England & Wales
Sand and Gravel												
Land won	1,357		25		472	302	23	530	5		0	
Marine dredged												
Total	1,357	25	25		472	302	23	530	5		0	
Crushed Rock												
Limestone/dolomite	753		36		114	118	1	484	0		0	
Igneous rock	224					92			93	8		
Sandstone	404				3	308		56	0	36		
Chalk	38							38				
Ironstone	122		122									
Total	1,541	c	158		117	519	1	578	94	44	0	
Total Aggregates	2,898	c	183		589	821	24	1,108	99	44	1	

TABLE 5f CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: WEST MIDLANDS

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
<i>Sand and Gravel</i>			
Land won	691	8,873	9,564
Marine dredged	1		1
Total	691	8,873	9,564
<i>Crushed Rock</i>			
Limestone/dolomite	2,589	1,964	4,553
Igneous rock	2,534	1,657	4,191
Sandstone	865	529	1,394
Chalk			
Ironstone	336		336
Total	6,325	4,150	10,475
Total Aggregates	7,016	13,023	20,039
Percent	35%	65%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: WEST MIDLANDS

Thousand tonnes

Aggregate mineral	Total	South West	South East	London	East of England	East Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales	Outside England & Wales
<i>Sand and Gravel</i>												
Land won	691	5	39		46	480	88	14	3		17	
Marine dredged	1									1		
Total	691	5	39		46	480	88	14	3	1	17	
<i>Crushed Rock</i>												
Limestone/dolomite	2,589	259				2,045	2	1		157	124	
Igneous rock	2,534	c				2,196			4	295	39	
Sandstone	865							15		851		
Chalk												
Ironstone	336		336									
Total	6,325	260	336		4,241	2	2	15	4	1,303	164	
Total Aggregates	7,016	265	375		4,721	90	29	7	1,303	181		

TABLE 5g CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: NORTH WEST

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
Sand and Gravel	Land won	2,754	3,656
	Marine dredged	425	425
	Total	3,179	4,081
Crushed Rock	Limestone/dolomite	5,455	13,709
	Igneous rock	695	928
	Sandstone	2,767	3,421
	Chalk		
	Ironstone		
Total	9,141	8,917	18,058
Total Aggregates	10,042	12,096	22,139
Percent	45%	55%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: NORTH WEST

Thousand tonnes

Aggregate mineral	Total	South West	South East	London	East of England	East Midlands	West Midlands	Yorkshire & Humber	North East	South Wales	North Wales	Outside England & Wales
Sand and Gravel	Land won	901			0	4	338	36	13		510	
	Marine dredged											
	Total	901			0	4	338	36	13		510	
Crushed Rock	Limestone/dolomite	8,253	0		4,729	74	1,149	3	3	115	2,298	
	Igneous rock	233	c		53				16	22	49	
	Sandstone	655	3		114	219	298					
	Chalk											
	Ironstone											
Total	9,141	3		4,896	293	1,446	19	137	32	1,482	2,347	
Total Aggregates	10,042	3		4,900	630	1,482	32	1,482	32	1,482	2,857	

TABLE 5h CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: YORKSHIRE AND THE HUMBER

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
Sand and Gravel	Land won	3,679	5,337
	Marine dredged	275	277
	Total	3,954	5,614
Crushed Rock	Limestone/dolomite	8,576	9,834
	Igneous rock	454	454
	Sandstone	1,144	2,085
	Chalk	397	421
	Ironstone		
Total	2,677	10,117	12,793
Total Aggregates	4,336	14,071	18,407
Percent	24%	76%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: YORKSHIRE AND THE HUMBER

Thousand tonnes

Aggregate mineral	Total	South West	South East	London	East of England	East Midlands	West Midlands	North West	North East	South Wales	North Wales	Outside England & Wales
Sand and Gravel	Land won	1,658			0	1,487	6	80	85		0	
	Marine dredged	2							2			
	Total	1,660			0	1,487	6	80	87		0	
Crushed Rock	Limestone/dolomite	1,257				1,185	10	24	38		0	
	Igneous rock	454				274			180			
	Sandstone	941					1	937		3		
	Chalk	24				24						
	Ironstone											
Total	2,677				1,483	11	961	218	305	3	0	
Total Aggregates	4,336				0	2,970	17	1,041	305	3	0	

TABLE 5i CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: NORTH EAST

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
<i>Sand and Gravel</i>			
Land won	780	1,046	1,826
Marine dredged		982	982
Total	780	2,028	2,808
<i>Crushed Rock</i>			
Limestone/dolomite	556	4,586	5,142
Igneous rock	130	1,977	2,107
Sandstone	132	11	143
Chalk			
Ironstone			
Total	818	6,574	7,392
Total Aggregates	1,598	8,602	10,201
Percent	16%	84%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: NORTH EAST

Thousand tonnes

Aggregate mineral	Total	South		London	East of England	East Midlands	West Midlands	North		Yorkshire & Humber	South Wales	North Wales	Outside England & Wales
		West	East					West	West				
<i>Sand and Gravel</i>													
Land won	780	7			0		0	97	677				
Marine dredged													
Total	780	7	0		0		0	97	677				
<i>Crushed Rock</i>													
Limestone/dolomite	556					130		48	508				
Igneous rock	130												
Sandstone	132						1	94	27	10			
Chalk													
Ironstone													
Total	818					130	1	142	535	10			
Total Aggregates	1,598	7	0		0	130	1	238	1,212	10			

TABLE 5j CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: SOUTH WALES

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
<i>Sand and Gravel</i>			
Land won	195	88	283
Marine dredged		915	915
Total	195	1,003	1,198
<i>Crushed Rock</i>			
Limestone/dolomite	622	5,934	6,556
Igneous rock	4	268	271
Sandstone	0	1,457	1,457
Chalk			
Ironstone			
Total	626	7,658	8,284
Total Aggregates	821	8,661	9,482
Percent	9%	91%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: SOUTH WALES

Thousand tonnes

Aggregate mineral	Total	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	North Wales	Outside England & Wales
<i>Sand and Gravel</i>												
Land won	195		9		0	2	142	25			17	
Marine dredged												
Total	195	9	9	0	2	142	25	17	232	3	2	2
<i>Crushed Rock</i>												
Limestone/dolomite	622	98			0	1	0	0				
Igneous rock	4											
Sandstone	0											
Chalk												
Ironstone												
Total	626	98	98	0	1	291	25	232	235	2	2	2
Total Aggregates	821	98	9	0	3	433	25	251	251	2	2	2

TABLE 5k CONSUMPTION OF PRIMARY AGGREGATES BY REGION IN 2001: NORTH WALES

Thousand tonnes

Aggregate mineral	Imports	Sales within Region	Total consumption
Sand and Gravel	Land won	798	909
	Marine dredged	44	68
	Total	842	977
Crushed Rock	Limestone/dolomite	2,573	2,683
	Igneous rock	812	947
	Sandstone	34	34
	Chalk		
	Ironstone		
Total	279	3,384	3,663
Total Aggregates	414	4,226	4,640
Percent	9%	91%	100%

IMPORTS OF PRIMARY AGGREGATES BY REGION: NORTH WALES

Thousand tonnes

Aggregate mineral	Total	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	Outside England & Wales
Sand and Gravel	Land won	111			1	0	47	62			1	
	Marine dredged	24						24				
	Total	135			1	0	47	86			1	
Crushed Rock	Limestone/dolomite	110	0			107		3	0		0	
	Igneous rock	135				0				5	129	
	Sandstone	34					33		0		0	
	Chalk											
	Ironstone											
Total	279	0			108	33	33	3	0	5	130	
Total Aggregates	414	0			108	80	88	88	0	5	131	

TABLE 6 SUMMARY OF SALES OF PRIMARY AGGREGATES (SAND & GRAVEL AND CRUSHED ROCK) IN 2001 BY MAJOR END USE

Thousand tonnes

End Use	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	England Total	South Wales	North Wales	Wales Total	England & Wales & Total
Coarse/fine concrete aggregate	8,450	14,128	4,296	8,806	11,679	7,706	3,358	7,035	2,440	67,898	2,598	2,421	5,019	72,917
Building/asphalting sand	1,065	3,127		1,778	1,136	1,168	1,083	548	452	10,357	568	285	853	11,210
Roadstone/gravel, coated	3,879	24		64	6,595	1,828	1,487	1,294	947	16,118	2,119	1,161	3,279	19,397
Roadstone, uncoated	9,154	755			10,782	2,179	1,670	3,653	2,365	30,558	1,541	949	2,490	33,049
Other screened and graded aggregates	4,492	840	27	1,736	4,893	776	2,250	2,250	1,313	18,576	1,589	1,697	3,286	21,862
Railway ballast	29				1,268	4		2	0	1,304	147	236	384	1,688
Armourstone	72	1			77	7	49	13	13	233	26	38	64	297
Constructional fill	5,166	3,192	207	1,966	4,869	1,193	3,352	2,997	1,228	24,169	2,723	1,798	4,521	28,690
Undifferentiated aggregate use	32,309	22,067	4,562	17,066	41,300	15,429	13,578	17,913	8,758	172,981	11,310	8,585	19,895	192,876
Total Sales										3,766				3,766

1. The 'product' categories include sales of both land-won and marine-dredged sand & gravel, and crushed rock.
2. Coated roadstone includes material exported from the quarry site for coating with bituminous binder.
3. Roadstone uncoated includes rock chippings for surfacing dressing.

TABLE 7 SUMMARY OF SALES OF LAND-WON PRIMARY AGGREGATES BY SELECTED ENVIRONMENTAL DESIGNATION IN 2001

	Thousand tonnes													
	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	England Total	South Wales	North Wales	Wales Total	England & Wales & Total
Sand and gravel														
All sites	5,184	12,450	837	15,025	10,046	9,932	3,097	4,936	1,177	62,684	115	1,342	1,458	64,141
National Park	c			240					41	281				281
AONB	532	1,523		356	11	755				3,177		27	27	3,204
SSSI	1,276	919		326	868	468	c	515	107	4,480	c		c	4,480
Geological SSSI	c	385		390	98	13	c			888				888
Biological SSSI	1,266	713		250	293	454	c	515	107	3,599				3,599
SPA and SAC	1,266	662		250	24	49	c		107	2,359	c		c	2,359
Green Belt	459	5,121	455	2,472	798	4,406	1,406	972	365	16,454				16,454
Crushed rock														
All sites	26,518	2,398		655	31,254	5,497	10,034	12,701	6,596	95,653	10,021	7,198	17,219	112,872
National Park	c				4,494		676	4,250	134	9,554	623		623	10,177
AONB	4,378	213		104	181	767	757	997	736	8,133		1,083	1,083	9,217
SSSI	2,790	69		104	16,902	2,077	1,376	3,755	1,636	28,710	2,898	2,329	5,227	33,937
Geological SSSI	4,899	69			15,630	2,077	1,376	2,511	1,135	27,697	1,074	2,329	3,404	31,100
Biological SSSI	423				10,552	1,099	1,376	1,445	1,655	16,550	2,679	241	2,920	19,470
SPA and SAC	370				1,247		1,376	578	1,229	4,799	360		360	5,160
Green Belt	3,741	269			112	1,046	2,001	4,267	276	11,712				11,712

1. From aggregate quarries only.

2. 'All sites' includes output from all mineral workings producing primary aggregates in 2001.

3. National Parks includes the New Forest and the Broads.

4. There are no Green Belts in Wales.

5. Designations are not mutually exclusive, e.g. SSSIs may overlap with others, such as National Parks and AONBs. Some SSSIs may also be designated for both their Biological and Geological importance. Figures cannot be totalled. For SSSIs, if there is any overlap with an extant planning permission then the total sales for the mineral working are recorded. However, the degree of overlap, and the actual or potential impacts of mineral extraction on the conservation interest of the site, whether biological or geological, will vary and are not reflected in the figures.

TABLE 8 SALES OF PRIMARY AGGREGATES BY TRANSPORT METHOD IN 2001

Thousand tonnes

Region	Road		Rail		Water		Total
	Sand and gravel	Crushed rock	Sand and gravel	Crushed rock	Sand and gravel	Crushed rock	
South West	5,882	19,960	6,557	6,557	6,557	391	32,790
South East	19,123	2,398	440	440	440	106	22,067
London	4,071	4,071	233	233	233	199	4,503
East of England	16,318	753	88	88	88	267	17,425
East Midlands	9,506	24,192	7,024	7,024	7,024	540	41,262
West Midlands	9,932	5,498					15,429
North West	3,633	10,004	30	30	30		13,667
Yorkshire & the Humber	5,211	12,015	677	677	677	9	17,913
North East	2,162	7,031	7	7	7		9,200
England	75,838	81,851	760	14,295	15,056	400	174,256
South Wales	1,005	9,716	238	238	238	6	10,965
North Wales	1,387	6,110	256	256	256	689	8,442
Wales	2,392	15,827	494	494	494	695	19,407
England and Wales	78,230	97,677	760	14,789	15,549	1,095	193,663

1. Crushed rock from outside England and Wales is not included.

2. Includes marine sand and gravel as distributed from wharves.

3. Figures are based on sales by destination information. Because of unallocated sales of unknown destination, there may be small differences in some regions with product sales.

4. In addition, 43,000 tonnes of china clay waste were delivered by water, mainly to London.

TABLE 9 PERMITTED RESERVES OF PRIMARY AGGREGATES AT 31st DECEMBER 2001 IN ACTIVE AND INACTIVE SITES

Million tonnes

Region	Sand and Gravel				Crushed Rock				Grand total		
	Active sites	Inactive: worked in past	Inactive: yet to be worked	Total	(Dormant sites)	Active sites	Inactive: worked in past	Inactive: yet to be worked		Total	(Dormant sites)
South West	39	5	6	50	2	920	460	5	1,386	93	1,436
South East	123	12	6	142	6	56	16	1	73	10	214
London	3			3							3
East of England	153	20	12	185	5	13	2	1	15		200
East Midlands	79	11	9	99	8	1,980	184	2	2,166	171	2,265
West Midlands	115	10	19	144	7	252	55	3	309	14	453
North West	55	1	1	58		337	9	0	346		404
Yorkshire & the Humber	45	6		51		438	32	0	471	23	521
North East	13	8	0	21	1	207	52		259	4	280
England	626	73	54	752	29	4,202	810	12	5,023	315	5,776
(%)	96%	97%	98%	96%	99%	86%	64%	97%	81%	54%	83%
South Wales	7	1		8		466	182	0	648	38	655
North Wales	20	2	1	23	0	222	283		505	229	528
Wales	27	2	1	31	0	688	465	0	1,153	267	1,184
(%)	4%	3%	2%	4%	1%	14%	36%	3%	19%	46%	17%
England and Wales	653	75	55	783	29	4,891	1,274	12	6,176	582	6,960

1. For aggregate and non-aggregate use.

2. Reserves in 'Dormant' sites are included in 'inactive sites worked in the past.'

3. Reserves of china clay waste that may be available for extraction are 229.5 million tonnes.

TABLE 10 SUMMARY OF PERMITTED RESERVES OF PRIMARY AGGREGATES AT 31st DECEMBER 2001 IN ACTIVE AND INACTIVE SITES AND BY ENVIRONMENTAL DESIGNATION

Million tonnes

	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	England Total	South Wales	North Wales	Wales Total	England & Wales Total
Sand and gravel														
All sites	50	142	3	185	99	144	58	51	21	752	8	23	31	783
National Park	c			1					0	2	3		3	4
AONB	3	25		3		17				48		3	3	51
SSSI	9	15		6	9	17	c	7	2	66	1		1	67
Geological SSSI	0	13		2	0	1	c			17				17
Biological SSSI	9	5		1	1	17	c	7	2	42				42
SPA and SAC	9	5		1	3	1	c	2	1	22	1		1	23
Green Belt	2	65	3	44	6	58	29	7	5	218				218
Crushed rock														
All sites	1,386	73		15	2,166	309	346	471	259	5,023	648	505	1,153	6,176
National Park	c				284		59	149	2	495	52	0	52	547
AONB	213	18		0	12	44	39	24	29	380	1	287	288	668
SSSI	297	2		0	531	195	77	190	93	1,384	158	258	416	1,801
Geological SSSI	465	5			405	195	77	126	61	1,334	64	50	114	1,448
Biological SSSI	85				449	149	77	139	89	988	124	25	149	1,137
SPA and SAC	73				41		77	71	41	303	20	16	36	339
Green Belt	91	34		0	1	35	35	134	5	335				335

1. For aggregate and non-aggregate use.

2. Including Active and Inactive sites.

3. Designations are not mutually exclusive, e.g. SSSIs may overlap with others, such as National Parks and AONBs. Some SSSIs may also be designated for both their Biological and Geological importance. Figures cannot be totalled. For SSSIs, if there is any overlap with an extant planning permission then the total reserves for the mineral working are recorded. However, the degree of overlap, and the actual or potential impacts of mineral extraction on the conservation interest of the site, whether biological or geological, will vary and are not reflected in the figures.

TABLE 11 TOTAL RESERVES OF PRIMARY AGGREGATES GRANTED PLANNING PERMISSION BETWEEN 1998 AND 2001

Region	Sand and gravel		Crushed rock		Grand total	
	Thousand tonnes	No. of sites	Thousand tonnes	No. of sites	Thousand tonnes	No. of sites
South West	8,560	14	139,692	14	148,252	28
South East	23,739	35	2,514	4	26,253	39
London	915	2			915	2
East of England	54,073	59	1,474	2	55,547	61
East Midlands	24,251	28	12,213	8	36,464	36
West Midlands	16,135	18	26,220	7	42,355	25
North West	12,965	9	24,440	11	37,405	20
Yorkshire & the Humber	20,833	18	32,728	17	53,561	35
North East	480	1	44,074	4	44,554	5
England	161,951	184	283,355	67	445,306	251
South Wales	81	2	117,161	26	117,242	28
North Wales	1,454	3	5,752	1	7,206	4
Wales	1,535	5	122,913	27	124,448	32
England and Wales	163,486	189	406,268	94	569,754	283

TABLE 12 TOTAL QUANTITY OF PRIMARY AGGREGATES REFUSED PLANNING PERMISSION BETWEEN 1998 AND 2001

Region	Sand and gravel		Crushed rock		Grand total	
	Thousand tonnes	No. of sites	Thousand tonnes	No. of sites	Thousand tonnes	No. of sites
South West	300	1			300	1
South East	10,133	12			10,133	12
London						
East of England	8,648	16	401	2	9,049	18
East Midlands	2,169	2	40,355	5	42,524	7
West Midlands	1,240	3			1,240	3
North West	3,671	2	10,610	3	14,281	5
Yorkshire & the Humber	500	2	10,234	3	10,734	5
North East			7,200	1	7,200	1
England	26,661	38	68,800	14	95,461	52
South Wales	400	1	500	1	900	2
North Wales	2,450	1	2,500	1	4,950	2
Wales	2,850	2	3,000	2	5,850	4
England and Wales	29,511	40	71,800	16	101,311	56

TABLE 13 NUMBER OF ACTIVE LAND-WON QUARRIES AND MARINE WHARVES

Region	Quarry						Marine wharf		
	Limestone	Igneous rock	Sandstone	Chalk	Ironstone	Sand & gravel	Sand & gravel	Crushed rock	
South West	49	15	21	3		45	6		
South East	10		4	7	3	123	23	13	
London						6	5		
East of England	4		6	11		134	6	2	
East Midlands	57	7	24	4	1	53			
West Midlands	9	5	3		1	56			
North West	18	3	25			36	4		
Yorkshire & the Humber	36		40	10		34	2		
North East	17	11	8			14	4		
England	200	41	131	35	5	501	50	15	
South Wales	28	3	24			6	16	1	
North Wales	16	5	2			14	1		
Wales	44	8	26			20	17	1	
England and Wales	244	49	157	35	5	521	67	16	

FIGURE 1 TOTAL RESERVES OF SAND AND GRAVEL GRANTED PLANNING PERMISSION, 1998 TO 2001 BY SITE TYPE

Sand & Gravel Planning Permissions Granted - England

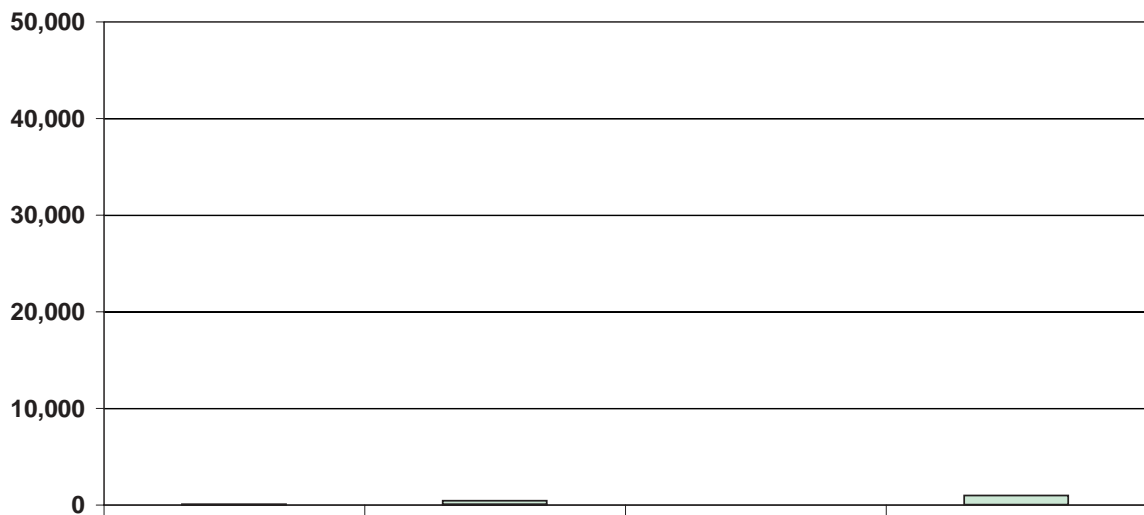
Thousand tonnes



	1998	No.	1999	No.	2000	No.	2001	No.
New quarry	22,644	21	8,946	12	11,588	14	15,515	14
Extension - vertical	918	3	4,300	1	460	1		
Extension - lateral	10,632	23	35,953	31	17,868	27	30,551	28
Borrow pit	430	1	80	2			2,066	6

Sand & Gravel Planning Permissions Granted - Wales

Thousand tonnes

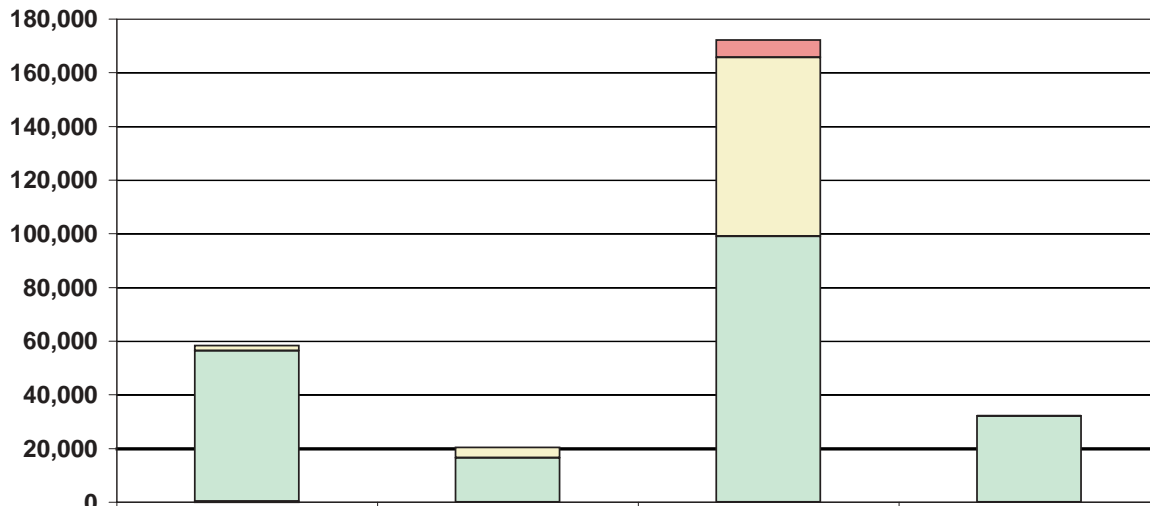


	1998	No.	1999	No.	2000	No.	2001	No.
New quarry	1	1						
Extension - vertical								
Extension - lateral			429	1			1,000	1
Borrow pit	80	1	25	1				

FIGURE 2 TOTAL RESERVES OF CRUSHED ROCK GRANTED PLANNING PERMISSION, 1998 TO 2001 BY SITE TYPE

Crushed Rock Planning Permissions Granted - England

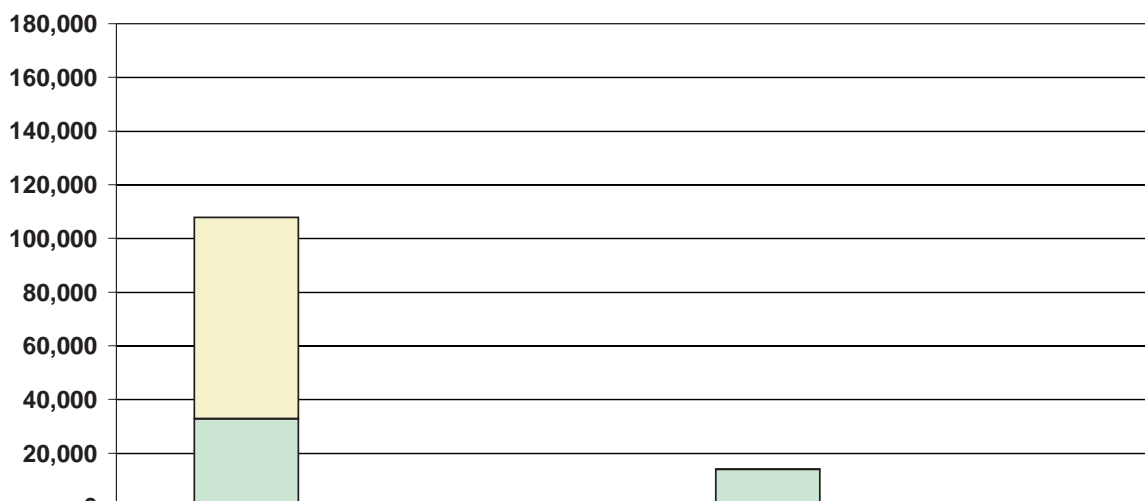
Thousand tonnes



	1998	No.	1999	No.	2000	No.	2001	No.
New quarry	10	1			6,500	2		
Extension - vertical	1,975	2	4,000	3	66,656	4	135	1
Extension - lateral	56,014	13	16,479	9	99,058	18	32,128	13
Borrow pit	400	1						

Crushed Rock Planning Permissions Granted - Wales

Thousand tonnes



	1998	No.	1999	No.	2000	No.	2001	No.
New quarry	10	1	90	3	110	2	100	1
Extension - vertical	75,000	1			50	1		
Extension - lateral	32,792	6			13,888	5	850	2
Borrow pit			0	1	18	2	5	2

FIGURE 3 COMPARISON OF SALES OF PRIMARY AGGREGATES 1973 TO 2001

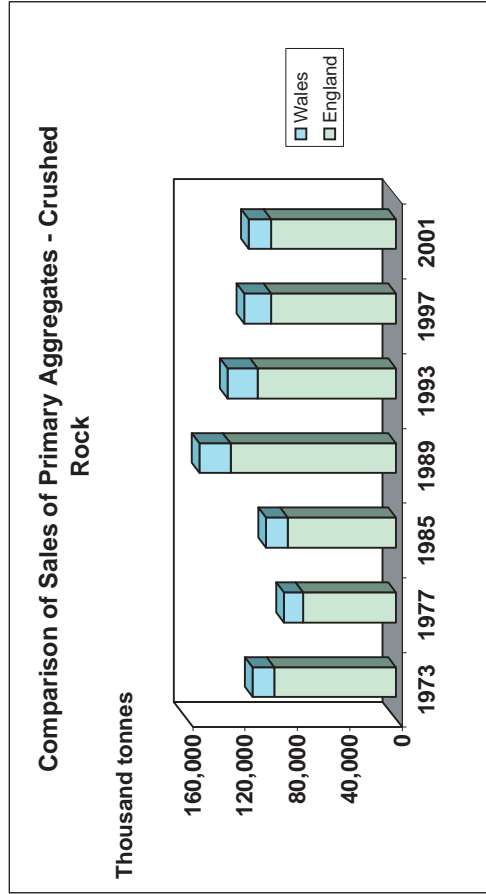
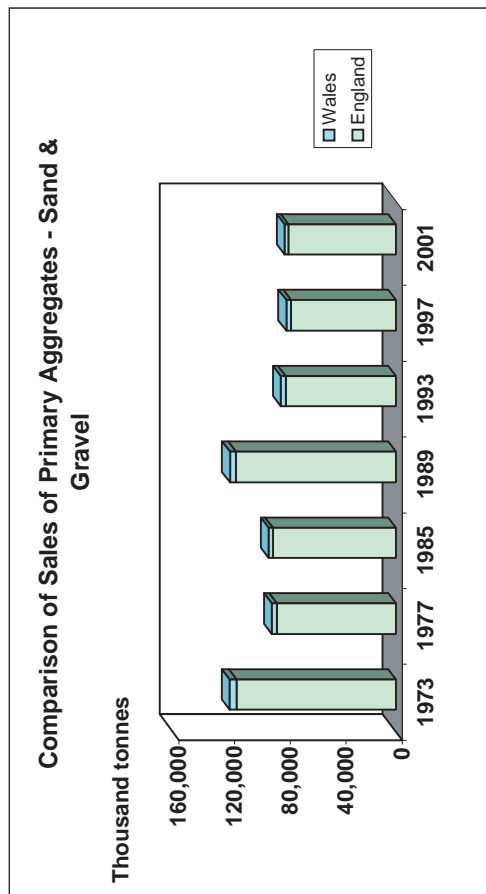
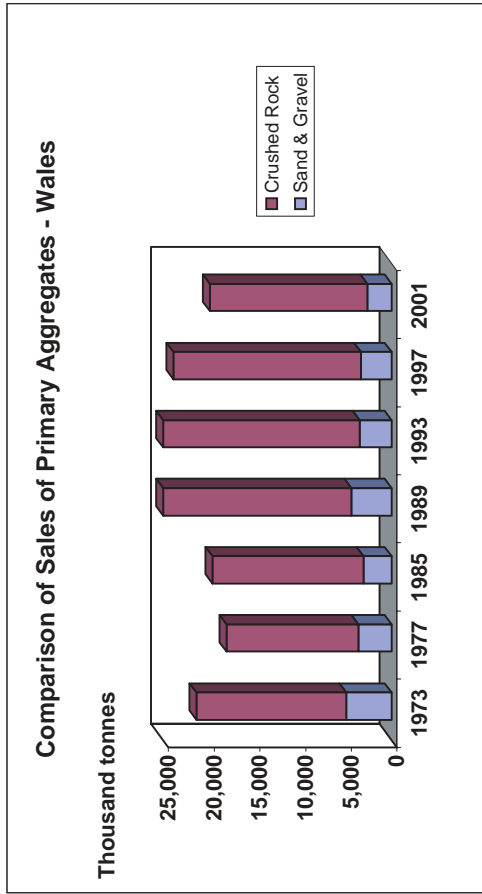
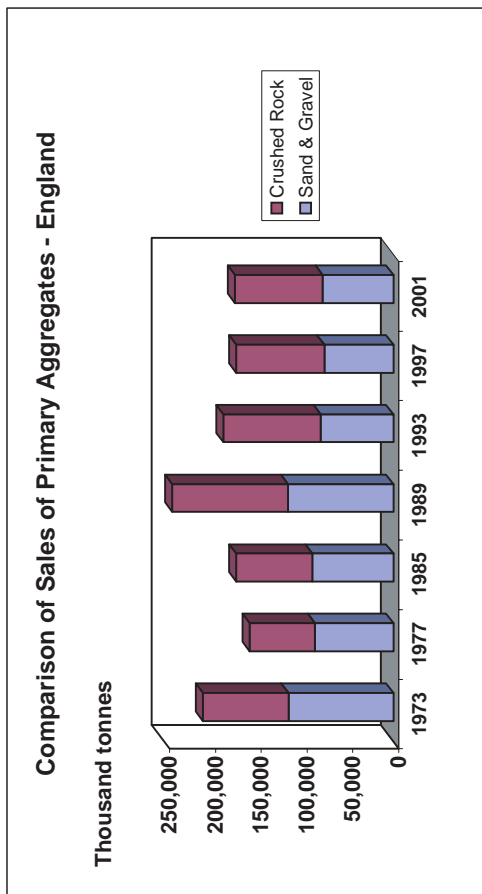
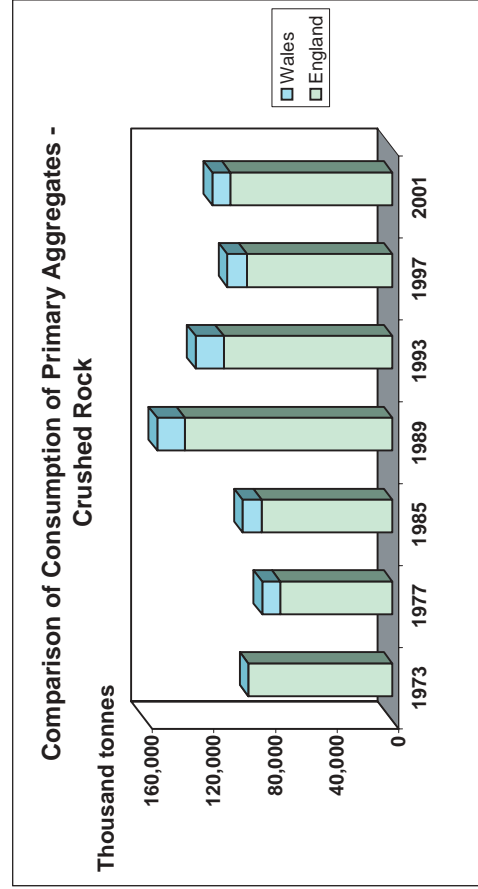
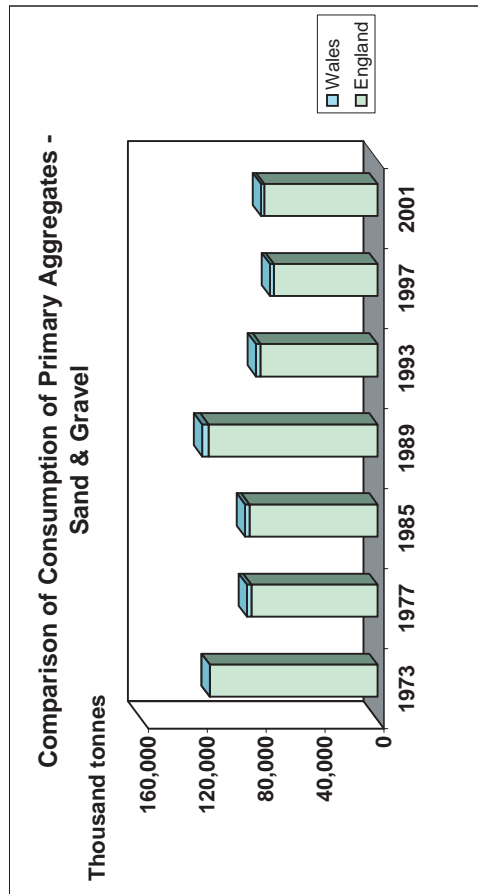
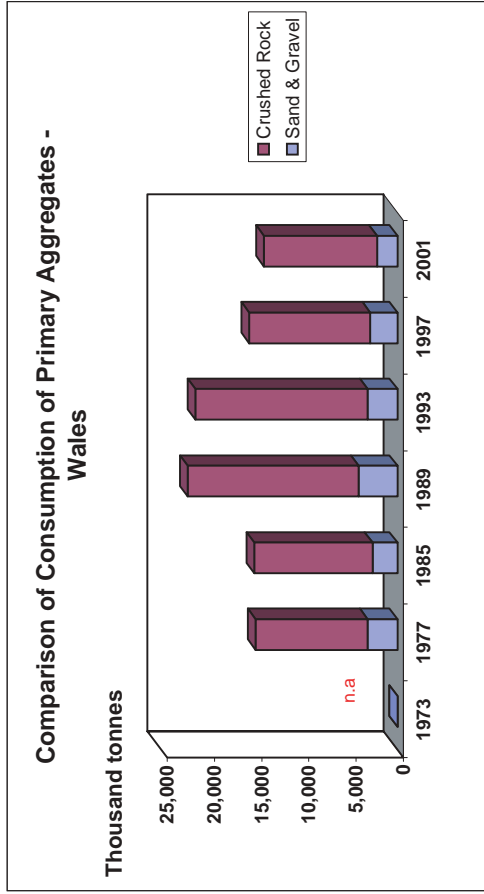
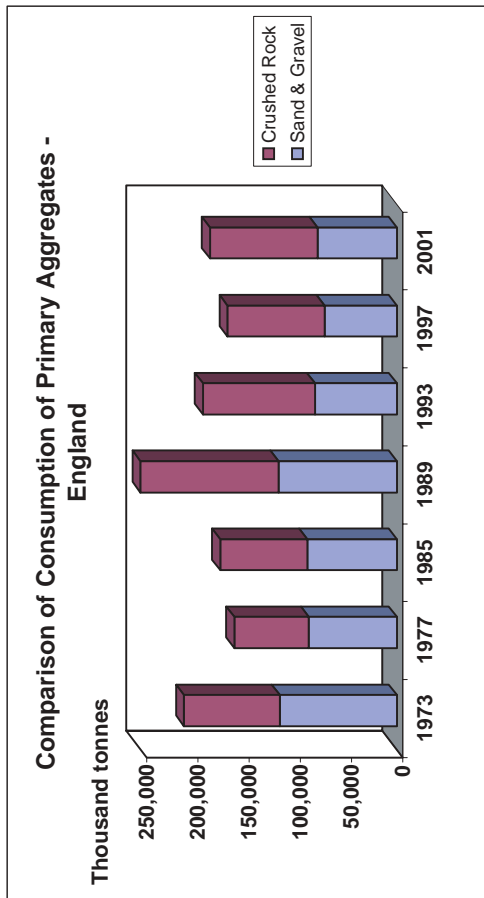
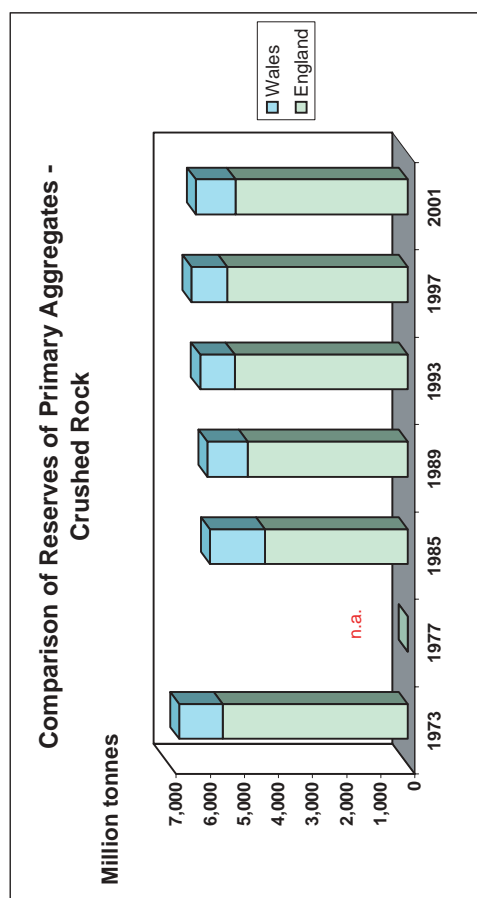
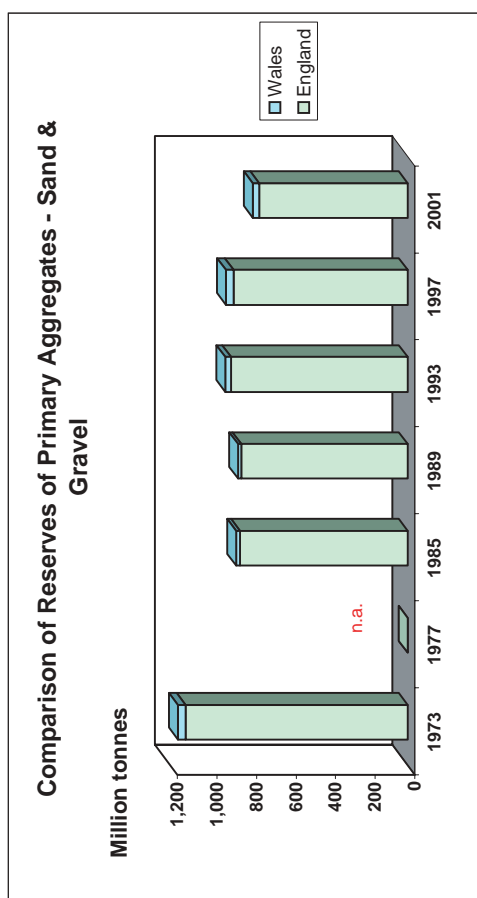
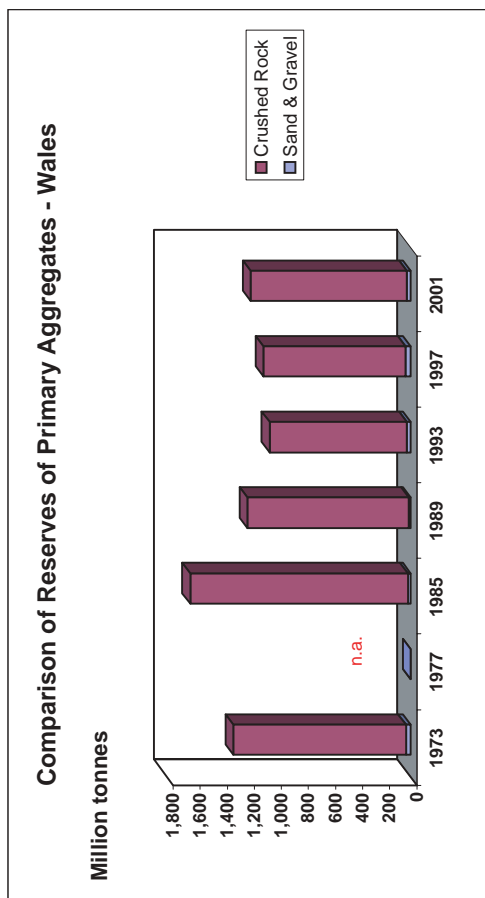
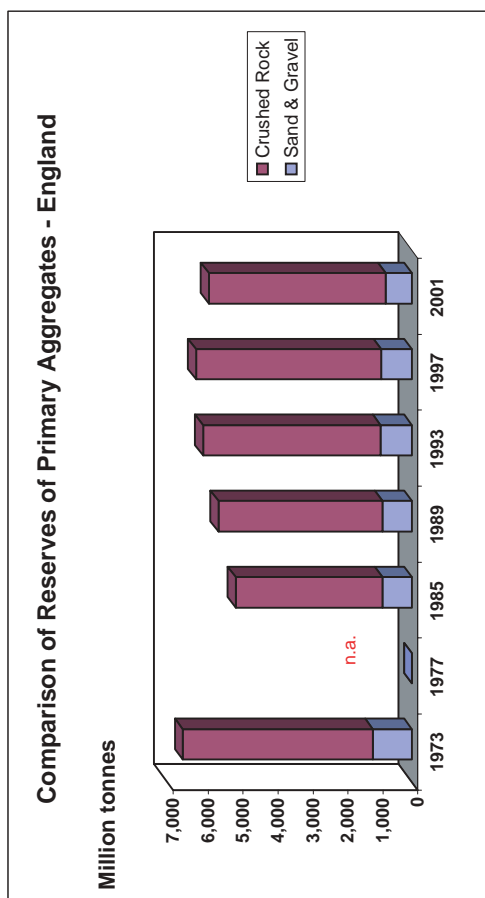


FIGURE 4 COMPARISON OF CONSUMPTION OF PRIMARY AGGREGATES 1973 TO 2001



n.a. - not available

FIGURE 5 COMPARISON OF PERMITTED RESERVES OF PRIMARY AGGREGATES 1973 TO 2001



n.a. - not available

TABLE A1 SALES OF LAND-WON SAND & GRAVEL BY PRODUCT (END USE) IN 2001

Product	Thousand tonnes													
	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	England Total	South Wales	North Wales	Wales Total	England & Wales Total
Sand														
Sand produced for asphalt	91	523		519	128	184	115	71	45	1,677		13	13	1,690
Sand produced for use in mortar (building sand)	786	2,544		1,226	1,007	984	933	477	407	8,364	42	228	269	8,633
Sand produced for concreting	1,940	3,246	312	4,017	4,378	3,895	1,289	1,935	365	21,377	31	661	692	22,069
Gravel														
Gravel coated with bituminous binder (on or off site)	52			63	21	1				136				136
Gravel suitable for concrete aggregate (inc. gravel/sand mixes)	1,359	4,647	300	4,690	3,506	3,417	117	1,424	193	19,654	16	268	284	19,938
Other screened and graded gravels for other aggregate purposes	659	635	11	1,416	615	546	355	721	89	5,047	6	121	128	5,174
Sand and Gravel														
Sand and gravel for constructional fill	297	856	182	1,597	391	547	287	308	79	4,543	20	52	72	4,615
Undifferentiated aggregate use			32	1,497		357				1,886				1,886
Total for Aggregate use	5,184	12,450	837	15,025	10,046	9,932	3,097	4,936	1,177	62,684	115	1,342	1,458	64,141
Sand for foundry purposes		48		86	19	74	687			853				853
Sand for glassmaking		37		401		181	653			1,297				1,297
Other industrial uses		30			191	112	354	29		1,495		59	59	1,554
Total for Non-aggregate use	67	853	837	487	209	366	1,694	29	59	3,706	115	59	59	3,765
Total for all	5,251	13,303	837	15,512	10,256	10,298	4,791	4,965	1,177	66,390	115	1,401	1,517	67,906

1. Figures may not add because of rounding.

2. West Midlands. Sand for foundry purposes includes undifferentiated non-aggregate uses.

TABLE A2 SALES OF MARINE-DREDGED SAND & GRAVEL BY PRODCUT (END USE) IN 2001

Product	Thousand tonnes													
	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	England Total	South Wales	North Wales	Wales Total	England & Wales Total
Sand														
Sand produced for asphalt		12		8						20	5		5	25
Sand produced for use in mortar (building sand)	187	48		25		35		0	296	521	44		565	861
Sand produced for concreting	314	2,793	1,784	62		158	109	639	5,859	581			581	6,440
Gravel														
Gravel coated with bituminous binder (on or off site)				1					1					1
Gravel suitable for concrete aggregate (inc. gravel/sand mixes)	78	3,389	1,900	36		167		319	5,889	4		4	4	5,893
Other screened and graded gravels for other aggregate purposes		203	16	26				26	271					271
Sand and Gravel														
Sand and gravel for constructional fill	28	773	24	8				1	835	63			63	898
Undifferentiated aggregate use				1,220		253			1,474					1,474
Total for Aggregate use	607	7,219	3,725	1,387		447	275	985	14,644	1,174	44	1,218	15,862	
Sand for foundry purposes														
Sand for glassmaking														
Other industrial uses														
Total for Non-aggregate use														
Total for all	607	7,219	3,725	1,387		449	275	985	14,646	1,190	44	1,234	15,880	

1. Figures may not add because of rounding.

TABLE A3 SALES OF CRUSHED ROCK BY PRODUCT (END USE) IN 2001

Product	Thousand tonnes													
	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	England Total	South Wales	North Wales	Wales Total	England & Wales Total
Crushed rock coated with bituminous binder (exc. Weight of binder)	2,260	24			1,914	1,300	680	305	640	7,123	1,170	650	1,820	8,942
Crushed rock transported to both company and external coating plants	1,568				4,660	527	808	989	306	8,859	949	511	1,460	10,318
Crushed rock produced for uncoated roadstone & foundation work	9,042	755			10,278	2,147	1,650	3,566	2,344	29,782	1,388	946	2,334	32,116
Rock chippings for surface dressing	112				504	31	20	87	22	777	153	4	156	933
Railway ballast	29				1,268	4		c	0	1,304	147	236	384	1,688
Coarse concrete aggregate	3,239	33			2,461	286	1,431	2,695	785	10,931	1,515	1,300	2,815	13,746
Fine concrete aggregate/mortar/asphalt	1,521	20			1,334	107	362	705	139	4,189	450	193	643	4,832
Other screened and graded aggregates	3,833	2			4,278	230	1,895	1,531	1,199	13,259	1,583	1,575	3,158	16,417
Armourstone	72	1			77	7	49	13	13	233	26	38	64	297
Rock for constructional fill	4,841	1,563			4,479	646	3,064	2,689	1,148	18,791	2,640	1,746	4,386	23,177
Undifferentiated aggregate use					0	211	75	120		406				406
Total for Aggregate use	26,518	2,398		655	31,254	5,497	10,034	12,701	6,596	95,653	10,021	7,198	17,219	112,872
Building stone (exc. reconstituted stone)	98	5			125	3	26	108	4	374	47	18	65	439
Cement manufacture	c				3,779	1		c		3,780	621	566	1,186	4,966
Agricultural use on the land and horticulture	270	67			250	75	24	76	395	1,314	56	9	66	1,379
Flux in iron and steel manufacture	187				833		1,088	c	430	2,538	631		631	3,169
For all other industrial uses	73	14			3,887	95	68	2,882	148	7,167	0	8	9	7,175
Total for Non-aggregate use	629	86		161	8,875	174	1,206	3,066	977	15,172	1,355	601	1,956	17,129
Total for all	27,146	2,484		815	40,128	5,671	11,240	15,767	7,573	110,825	11,376	7,800	19,176	130,001

1. Figures may not add because of rounding.
2. Excludes limestone and chalk for cement manufacture in the South East, East of England, North West and North East.
3. Some figures have been combined to preserve confidentiality.

TABLE A4 SALES OF CRUSHED ROCK AGGREGATE BY MINERAL IN 2001

Thousand tonnes

Region	Limestone/ dolomite	Igneous rock	Sandstone	Chalk	Ironstone	Total
South West	23,176	2,648	694	c		26,518
South East	1,833		71	36	458	2,398
London						
East of England	294		361			655
East Midlands	16,362	14,357	165	370		31,254
West Midlands	2,605	1,775	1,117		c	5,497
North West	5,541	695	3,798			10,034
Yorkshire & the Humber	10,718		1,543	441		12,701
North East	4,266	2,329	1			6,596
England	64,787	21,803	7,749	856	515	95,653
South Wales	6,536	838	2,648			10,021
North Wales	6,062	1,136				7,198
Wales	12,598	1,974	2,648			17,219
England and Wales	77,385	23,777	10,396	856	515	112,872

1. For aggregate use only.

2. West Midlands. A small quantity of ironstone is included with Limestone/dolomite.

3. Limestone/dolomite includes a small quantity of chalk.

TABLE A5 SALES OF CRUSHED ROCK AGGREGATE FOR NON-AGGREGATE USE BY MINERAL IN 2001

Thousand tonnes

Region	Limestone/ dolomite	Igneous rock	Sandstone	Chalk	Ironstone	Total
South West	573	15	17	24		629
South East	42		1	42	1	86
London						
East of England	0			160		161
East Midlands	8,704	2	101	67		8,875
West Midlands	172	1	0		0	174
North West	1,179	6	21			1,206
Yorkshire & the Humber	519		106	2,441		3,066
North East	962	2	13			977
England	12,151	26	259	2,734	1	15,172
South Wales	1,344	1	10			1,355
North Wales	595	6				601
Wales	1,939	8	10			1,956
England and Wales	14,090	34	269	2,734	1	17,129

1. Excludes limestone and chalk for cement manufacture in the South East, East of England, North West and North East.

TABLE B1 PERMITTED RESERVES OF PRIMARY AGGREGATE MINERALS AT 31st DECEMBER 2001 BY MINERAL-ACTIVE SITES

Million tonnes

Product	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales
Sand suitable for concreting	1	22	1	14	10	7	7	9	4	2	2
Other sand	5	44		24	4	11	15	7	5	1	4
Undifferentiated sand	3			0			19				
Total sand	8	65	1	38	14	18	40	16	9	3	6
Total gravel	2	21	1	8	7	8	0	6	3	1	1
Undifferentiated sand and gravel	29	37	1	107	58	89	15	23	1	3	13
Total sand and gravel	39	123	3	153	79	115	55	45	13	7	20
Sand and gravel for non-aggregate use	0%	13%	13%	5%	0%	5%	19%	2%	0%	0%	1%
Limestone/dolomite	712	43		2	1,522	202	170	322	117	326	168
Limestone/dolomite for non-aggregate use	1%	1%	0%	2%	28%	2%	14%	8%	13%	17%	30%
Igneous rock	188				439	28	58		89	46	54
Igneous rock for non-aggregate use	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Sandstone	19	4		8	10	23	109	29		94	
Sandstone for non-aggregate use	2%	7%	0%	0%	50%	1%	4%	1%	0%	3%	0%
Chalk	1	4		4	7			87			
Chalk for non-aggregate use	0%	28%	0%	0%	15%	0%	0%	90%	0%	0%	0%
Ironstone		6			2	0					
Ironstone for non-aggregate use	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total crushed rock	920	56	0%	13	1,980	252	337	438	207	466	222
Crushed rock for non-aggregate use	1%	4%	0%	2%	28%	2%	9%	24%	13%	12%	30%

1. % figures indicate estimates of material suitable for non-aggregate use.

TABLE B2 PERMITTED RESERVES OF PRIMARY AGGREGATE MINERALS AT 31st DECEMBER 2001 BY MINERAL-INACTIVE SITES

Product	Million tonnes										
	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	South Wales	North Wales
Sand suitable for concreting	3	2		3	1	1			2		
Other sand	1	11		12	0	0	1		1		1
Undifferentiated sand							1				
Total sand	4	13		15	1	2	2		3		1
Total gravel	2	1		1	0	1			2	0	
Undifferentiated sand and gravel	6	4		16	18	27	0	6	3	1	2
Total sand and gravel	11	18		32	20	29	2	6	8	1	3
Sand and gravel for non-aggregate use	3%	5%		15%	0%	0%	0%	0%	0%	0%	0%
Limestone/dolomite	380	1		2	176	12	3	24	45	78	55
Limestone/dolomite for non-aggregate use	0.5%	0%			26%	0%	0%	0%	0%	0%	0%
Igneous rock	79					41			7	25	220
Igneous rock for non-aggregate use	0%	0%			0%	0%	0%	0%	0%	0%	0%
Sandstone	6				3	5	6	8	0	79	8
Sandstone for non-aggregate use	2%	0%			17%	0%	0%	3%	0%	0%	0%
Chalk	c	16			8			c			
Chalk for non-aggregate use	0%	1%			15%	0%	0%	100%	0%	0%	0%
Ironstone						c					
Ironstone for non-aggregate use						100%	0%	0%	0%	0%	0%
Total crushed rock	466	17		2	186	57	9	32	52	182	283
Crushed rock for non-aggregate use	0.4%	1%			26%	0%	0%	2%	0%	0%	0%

1. South West. Limestone/dolomite includes a small quantity of chalk.

TABLE B3 PERMITTED RESERVES OF PRIMARY AGGREGATE AT 31st DECEMBER 2001 BY ENVIRONMENTAL DESIGNATION – ACTIVE SITES

Million tonnes

	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	England Total	South Wales	North Wales	Wales Total	England & Wales Total
Sand and gravel														
All sites	39	123	3	153	79	115	55	45	13	626	7	20	27	653
National Park	c			1					0	1	2		2	3
AONB	1	18		3		16				38		2	2	40
SSSI	9	14		6	8	17	c	6	1	61	0		0	61
Geological SSSI	0	13		2	0	c	c			6				6
Biological SSSI	9	4		1	1	17	c	6	1	38				38
SPA and SAC	9	5		1	3	1	c		1	20	0		0	20
Green Belt	2	54	3	33	6	51	28	7	5	189				189
Crushed rock														
All sites	920	56		13	1,980	252	337	438	207	4,203	466	222	688	4,891
National Park	c				280		59	143	2	484	22		22	506
AONB	183	6		0	5	39	39	22	29	323		57	57	381
SSSI	153	2		0	531	195	77	186	81	1,226	131	47	177	1,403
Geological SSSI	221	5			404	195	77	126	61	1,089	62	46	109	1,198
Biological SSSI	39				449	149	77	135	89	940	124	2	125	1,065
SPA and SAC	26				41		77	67	41	253	17		17	270
Green Belt	89	34		0	1	9	32	131	3	300				300

1. For aggregate and non-aggregate use.

2. Designations are not mutually exclusive, e.g. SSSIs may overlap with others, such as National Parks and AONBs. Some SSSIs may also be designated for both their Biological and Geological importance. Figures cannot be totalled. For SSSIs, if there is any overlap with an extant planning permission then the total reserves for the mineral working are recorded. However, the degree of overlap, and the actual or potential impacts of mineral extraction on the conservation interest of the site, whether biological or geological, will vary and are not reflected in the figures.

TABLE B4 PERMITTED RESERVES OF PRIMARY AGGREGATE AT 31st DECEMBER 2001 BY ENVIRONMENTAL DESIGNATION – INACTIVE SITES

Product	Million tonnes													
	South West	South East	London	East of England	East Midlands	West Midlands	North West	Yorkshire & Humber	North East	England Total	South Wales	North Wales	Wales Total	England & Wales Total
Sand and gravel														
All sites	11	18		32	20	29	2	6	8	126	1	3	4	130
National Park	0									0	1		1	1
AONB	2	7				1				10		1	1	11
SSSI	0	1		0	1		c	2	1	5	0		0	5
Geological SSSI				0			c			0				0
Biological SSSI	0	1					c	2	1	4				4
SPA and SAC	0						c	2		2	0		0	2
Green Belt	0	10		11		7	c		0	29				29
Crushed rock														
All sites	465	17		2	186	57	9	32	52	822	182	282	465	1,287
National Park					4			6		10	30	0	30	40
AONB	30	12			7	5		2	0	56	1	230	231	287
SSSI	144				1			3	11	159	27	212	239	397
Geological SSSI	244				1					245	1	4	5	250
Biological SSSI	45							3		49		24	24	72
SPA and SAC	47							3		50	3	16	19	69
Green Belt	2				0	27	3	2	1	35				35

1. For aggregate and non-aggregate use.

2. Designations are not mutually exclusive, e.g. SSSIs may overlap with others, such as National Parks and AONBs. Some SSSIs may also be designated for both their Biological and Geological importance. Figures cannot be totalled. For SSSIs, if there is any overlap with an extant planning permission then the total reserves for the mineral working are recorded. However, the degree of overlap, and the actual or potential impacts of mineral extraction on the conservation interest of the site, whether biological or geological, will vary and are not reflected in the figures.

TABLE C1 TOTAL RESERVES OF SAND AND GRAVEL GRANTED PLANNING PERMISSION BETWEEN 1998 AND 2001 BY SITE TYPE

Thousand tonnes

Region	New quarries		Extensions		Borrow pits	
	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions
South West	5,920	3	2,640	11		
South East	8,842	14	14,897	21		
London	915	2				
East of England	19,080	22	33,387	31	1,606	6
East Midlands	9,818	8	13,463	17	970	3
West Midlands	6,895	5	9,240	13		
North West	3,520	2	9,445	7		
Yorkshire & the Humber	3,703	5	17,130	13		
North East			480	1		
England	58,693	61	100,682	114	2,576	9
South Wales	1	1			80	1
North Wales			1,429	2	25	1
Wales	1	1	1,429	2	105	2
England and Wales	58,694	62	102,111	116	2,681	11

TABLE C2 TOTAL QUANTITY OF SAND AND GRAVEL REFUSED PLANNING PERMISSION BETWEEN 1998 AND 2001 BY SITE TYPE

Thousand tonnes

Region	New quarries		Extensions		Borrow pits	
	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions
South West	300	1				
South East	8,680	5	1,453	7		
London						
East of England	6,833	12	1,565	3	250	1
East Midlands	1,029	1	1,140	1		
West Midlands			1,240	3		
North West	711	1	2,960	1		
Yorkshire & the Humber			500	2		
North East						
England	17,553	20	8,858	17	250	1
South Wales	400	1				
North Wales	2,450	1				
Wales	400	1	2,450	1		
England and Wales	17,953	21	11,308	18	250	1

TABLE C3 TOTAL RESERVES OF CRUSHED ROCK GRANTED PLANNING PERMISSION BETWEEN 1998 AND 2001 BY SITE TYPE

Thousand tonnes

Region	New quarries		Extensions		Borrow pits	
	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions
South West	10	1	139,682	13		
South East			2,514	4		
London						
East of England			1,474	2		
East Midlands	4,500	1	7,313	6	400	1
West Midlands			26,220	7		
North West			24,440	11		
Yorkshire & the Humber	2,000	1	30,728	16		
North East			44,074	4		
England	6,510	3	276,445	63	400	1
South Wales	310	7	116,828	14	23	5
North Wales			5,752	1		
Wales	310	7	122,580	15	23	5
England and Wales	6,820	10	399,025	78	423	6

TABLE C4 TOTAL QUANTITY OF CRUSHED ROCK REFUSED PLANNING PERMISSION BETWEEN 1998 AND 2001 BY SITE TYPE

Thousand tonnes

Region	New quarries		Extensions		Borrow pits	
	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions
South West						
South East						
London						
East of England	317	1	84	1		
East Midlands	11,700	2	28,655	3		
West Midlands						
North West			10,610	3		
Yorkshire & the Humber	0	1	10,234	2		
North East			7,200	1		
England	12,017	4	56,783	10		
South Wales			500	1		
North Wales			2,500	1		
Wales			3,000	2		
England and Wales	12,017	4	59,783	12		

TABLE C5 TOTAL RESERVES OF SAND AND GRAVEL GRANTED PLANNING PERMISSION BETWEEN 1998 AND 2001 BY DESIGNATION

Thousand tonnes

Region	National Park		AONB		SPA/SAC		SSSI		Green Belt	
	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions
South West			150	1					25	1
South East	35	1	725	4	940	2	1,940	3	6,555	10
London									915	2
East of England							1,250	1	10,408	4
East Midlands									2,779	2
West Midlands			460	1					4,375	8
North West					200	1	200	1	4,895	3
Yorkshire & the Humber					1,100	1	5,000	2	1,075	2
North East									480	1
England	35	1	1,335	6	2,240	4	8,390	7	31,507	33
South Wales										
North Wales										
Wales										
England and Wales	35	1	1,335	6	2,240	4	8,390	7	31,507	33

TABLE C6 TOTAL QUANTITY OF SAND AND GRAVEL REFUSED PLANNING PERMISSION BETWEEN 1998 AND 2001 BY DESIGNATION

Thousand tonnes

Region	National Park		AONB		SPA/SAC		SSSI		Green Belt	
	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions
South West										
South East	555	3			55	1			4,415	4
London										
East of England									3,600	1
East Midlands										
West Midlands									140	1
North West									711	1
Yorkshire & the Humber									500	1
North East										
England	555	3			55	1			9,366	8
South Wales										
North Wales										
Wales										
England and Wales	555	3			55	1			9,366	8

TABLE C7 TOTAL RESERVES OF CRUSHED ROCK GRANTED PLANNING PERMISSION BETWEEN 1998 AND 2001 BY DESIGNATION

Thousand tonnes

Region	National Park		AONB		SPA/SAC		SSSI		Green Belt	
	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions
South West			250	1					37,000	1
South East			1,020	2			300			1
London										
East of England										
East Midlands	400	1							2,828	2
West Midlands			900	2						
North West			1,300	2	11,850	4	11,700		5,650	3
Yorkshire & the Humber		1							17,053	12
North East										
England	775	2	3,470	7	11,850	4	12,000	4	62,531	18
South Wales	38	2					27,000			1
North Wales										
Wales	38	2					27,000			1
England and Wales	813	4	3,470	7	11,850	4	39,000	5	62,531	18

TABLE C8 TOTAL QUANTITY OF CRUSHED ROCK REFUSED PLANNING PERMISSION BETWEEN 1998 AND 2001 BY DESIGNATION

Region	National Park		AONB		SPA/SAC		SSSI		Green Belt	
	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions	Reserves	Permissions
South West										
South East										
London										
East of England										
East Midlands	1,655	1							11,700	2
West Midlands										
North West							0	1	10	2
Yorkshire & the Humber	5,784	1							4,450	1
North East									7,200	1
England	7,439	2			0	1	0	1	23,360	6
South Wales										
North Wales										
Wales										
England and Wales	7,439	2			0	1	0	1	23,360	6

Thousand tonnes

**TABLE D1 COMPARISON OF SALES OF PRIMARY AGGREGATES,
1973, 1977, 1985, 1989, 1993, 1997 AND 2001**

Thousand tonnes

Sand and Gravel—Land Won and Marine Dredged														
Region	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	8,662	7	5,509	6	6,380	7	7,703	6	4,605	6	5,092	6	5,791	7
South East, London, East of England	60,660	51	46,731	52	49,305	54	62,345	52	38,648	47	36,175	46	40,643	51
East Midlands	14,184	12	10,539	12	10,959	12	15,961	13	13,278	16	11,314	14	10,046	13
West Midlands	13,511	11	10,020	11	10,853	12	13,830	12	10,849	13	9,936	13	9,932	12
Yorkshire & the Humber	6,780	6	4,991	6	4,324	5	6,175	5	4,706	6	4,958	6	5,211	7
North East & North West	10,638	9	7,880	9	6,690	7	8,791	7	7,202	9	7,977	10	5,705	7
England	114,435	96	85,670	96	88,511	97	114,805	96	79,288	96	75,452	96	77,328	97
South Wales	2,413	2	1,794	2	1,529	2	2,524	2	1,818	2	2,008	3	1,289	2
North Wales	2,536	2	1,860	2	1,576	2	1,909	2	1,725	2	1,392	2	1,387	2
Wales	4,949	4	3,654	4	3,105	3	4,433	4	3,543	4	3,400	4	2,676	3
England and Wales	119,384	100	89,324	100	91,616	100	119,238	100	82,831	100	78,852	100	80,004	100
Crushed Rock														
Region	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	30,195	28	19,990	23	25,850	26	38,213	25	29,193	23	22,945	20	26,518	23
South East, London, East of England	1,961	2	1,611	2	2,126	2	3,820	3	1,759	1	2,299	2	3,053	3
East Midlands	21,569	20	16,451	19	21,508	22	33,651	22	31,741	25	31,475	27	31,254	28
West Midlands	10,428	10	7,960	9	8,317	8	12,804	9	8,402	7	6,456	6	5,497	5
Yorkshire & the Humber	12,033	11	10,066	12	9,610	10	16,936	11	13,867	11	13,157	11	12,701	11
North East & North West	17,151	16	15,274	18	15,717	16	21,345	14	21,110	16	19,523	17	16,630	15
England	93,337	85	71,352	83	83,128	83	126,769	84	106,072	82	95,855	82	95,652	85
South Wales	10,182	9	10,306	12	9,532	10	13,137	9	14,739	11	12,912	11	10,021	9
North Wales	6,247	6	4,110	5	6,959	7	10,497	7	8,044	6	7,549	6	7,198	6
Wales	16,429	15	14,416	17	16,491	17	23,634	16	22,783	18	20,461	18	17,219	15
England and Wales	109,766	100	85,768	100	99,619	100	150,403	100	128,855	100	116,316	100	112,872	100
Total Primary Aggregates														
Region	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	38,857	17	25,499	15	32,230	17	45,916	17	33,798	16	28,037	14	32,309	17
South East, London, East of England	62,621	27	48,342	28	51,431	27	66,165	25	40,407	19	38,474	20	43,696	23
East Midlands	35,753	16	26,990	15	32,467	17	49,612	18	45,019	21	42,789	22	41,300	21
West Midlands	23,939	10	17,980	10	19,170	10	26,634	10	19,251	9	16,392	8	15,429	8
Yorkshire & the Humber	18,813	8	15,057	9	13,934	7	23,111	9	18,573	9	18,115	9	17,912	9
North East & North West	27,789	12	23,154	13	22,407	12	30,136	11	28,312	13	27,500	14	22,335	12
England	207,772	91	157,022	90	171,639	90	241,574	90	185,360	88	171,307	88	172,981	90
South Wales	12,595	5	12,100	7	11,061	6	15,661	6	16,557	8	14,920	8	11,310	6
North Wales	8,783	4	5,970	3	8,535	4	12,406	5	9,769	5	8,941	5	8,585	6
Wales	21,378	9	18,070	10	19,596	10	28,067	10	26,326	12	23,861	12	19,895	10
England and Wales	229,150	100	175,092	100	191,235	100	269,641	100	211,686	100	195,168	100	192,876	100

1. Totals may not agree because of rounding.

TABLE D2 COMPARISON OF CONSUMPTION OF PRIMARY AGGREGATES, 1973, 1977, 1985, 1989, 1993, 1997 AND 2001

Thousand tonnes

Region	Sand and Gravel—Land Won and Marine Dredged													
	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	8,796		6,330	7	7,304	8	8,994	8	5,415	7	5,498	7	6,263	8
South East, London, East of England	61,447		46,330	52	48,488	54	62,211	52	38,597	47	32,272	44	40,191	51
East Midlands	11,115		7,973	9	8,889	10	13,145	11	9,944	12	8,559	12	8,703	11
West Midlands	11,507		8,854	10	9,820	11	12,527	11	10,519	13	9,015	12	9,564	12
Yorkshire & the Humber	7,697		6,279	7	5,327	6	7,938	7	6,646	8	6,458	9	5,614	7
North East & North West	13,409		9,951	11	7,551	8	10,328	9	8,444	10	8,691	12	6,889	9
England	113,971		85,717	96	87,379	97	115,143	97	79,565	96	70,493	96	77,225	97
South Wales	2,755		1,890	2	1,689	2	2,636	2	1,934	2	1,963	3	1,198	2
North Wales	n.a.		1,254	1	957	1	1,450	1	1,226	1	900	1	977	1
Wales	n.a.		3,144	4	2,646	3	4,086	3	3,160	4	2,863	4	2,175	3
England and Wales	n.a.		88,861	100	90,025	100	119,229	100	82,725	100	73,356	100	79,399	100
Region	Crushed Rock													
	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	22,156		13,537	16	16,775	17	25,821	17	21,697	17	14,763	14	19,140	16
South East, London, East of England	12,406		9,193	11	13,335	14	24,608	16	15,294	12	14,579	14	22,736	19
East Midlands	10,979		9,456	11	12,538	13	18,598	12	17,232	13	15,568	15	14,448	12
West Midlands	11,406		8,577	10	10,265	11	16,376	11	11,297	9	8,419	8	10,475	9
Yorkshire & the Humber	12,455		10,292	12	9,103	9	16,790	11	14,311	11	12,848	12	12,793	11
North East & North West	23,955		21,655	26	22,891	24	32,500	21	29,718	23	28,221	26	25,450	22
England	93,357		72,710	86	84,907	87	134,693	88	109,549	86	94,398	88	105,042	90
South Wales	10,009		9,621	11	8,401	9	12,426	8	13,619	11	10,103	9	8,284	7
North Wales	n.a.		2,233	3	4,092	4	5,660	4	4,615	4	2,733	3	3,663	3
Wales	n.a.		11,854	14	12,493	13	18,086	12	18,234	14	12,836	12	11,947	10
England and Wales	n.a.		84,564	100	97,400	100	152,779	100	127,783	100	107,234	100	116,990	100
Region	Total Primary Aggregates													
	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	30,952		19,867	11	24,079	13	34,815	13	27,112	13	20,261	11	25,403	13
South East, London, East of England	73,853		55,523	32	61,823	33	86,819	32	53,891	26	46,851	26	62,927	32
East Midlands	22,094		17,429	10	21,427	11	31,743	12	27,176	13	24,127	13	23,151	12
West Midlands	22,913		17,431	10	20,085	11	28,903	11	21,816	10	17,434	10	20,039	10
Yorkshire & the Humber	20,152		16,571	10	14,430	8	24,728	9	20,957	10	19,306	11	18,407	9
North East & North West	37,364		31,606	18	30,442	16	42,828	16	38,162	18	36,912	20	32,339	16
England	207,328		158,427	91	172,286	92	249,836	92	189,114	90	164,891	91	182,267	93
South Wales	12,764		11,511	7	10,090	5	15,062	6	15,553	7	12,066	7	9,482	5
North Wales	n.a.		3,487	2	5,049	3	7,110	3	5,841	3	3,633	2	4,640	2
Wales	n.a.		14,998	9	15,139	8	22,172	8	21,394	10	15,699	9	14,122	7
England and Wales	n.a.		173,425	100	187,425	100	272,008	100	210,508	100	180,590	100	196,389	100

1. Totals may not agree because of rounding.

2. n.a. - not available.

TABLE D3 COMPARISON OF PERMITTED RESERVES OF PRIMARY AGGREGATES, 1973, 1977, 1985, 1989, 1993, 1997 AND 2001

Million tonnes

Region	Sand and Gravel—Land Won													
	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	153	13	171		72	8	72	8	83	9	74	8	50	6
South East, London, East of England	442	38	n.a.		377	43	363	42	405	44	359	39	330	42
East Midlands	175	15	147		143	16	149	17	130	14	126	14	99	13
West Midlands	188	16	156		140	16	132	15	140	15	166	18	144	18
Yorkshire & the Humber	66	6	43		42	5	54	6	37	4	58	6	51	7
North East & North West	101	9	66		74	9	74	9	100	11	98	11	79	10
England	1,125	97	n.a.		848	97	844	98	895	97	881	96	752	96
South Wales	9	1	n.a.		2	0	0	0	10	1	14	2	8	1
North Wales	28	2	n.a.		20	2	16	2	20	2	26	3	23	3
Wales	37	3	n.a.		22	3	16	2	30	3	40	4	31	4
England and Wales	1,162	100	n.a.		870	100	860	100	925	100	921	100	783	100
Region	Crushed Rock													
	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	1,788	27	1,842		1,089	19	1,393	24	1,310	21	1,435	23	1,386	23
South East, London, East of England	n.a. ¹	0	n.a.		31	1	42	1	71	1	57	1	88	1
East Midlands	1,733	26	1,543		1,773	31	1,896	32	1,957	32	2,091	33	2,166	35
West Midlands	228	3	267		241	4	235	4	216	4	465	7	309	5
Yorkshire & the Humber	522	8	n.a.		257	4	413	7	531	9	550	9	471	8
North East & North West	1,162	17	1,011		809	14	717	12	1,002	16	705	11	605	10
England	5,433	81	n.a.		4,200	72	4,696	80	5,087	83	5,303	83	5,023	82
South Wales	656	10	n.a.		492	8	419	7	581	10	651	10	648	10
North Wales	619	9	n.a.		1,117	19	772	13	433	7	399	6	505	8
Wales	1,275	19	n.a.		1,609	28	1,191	20	1,014	17	1,050	17	1,153	18
England and Wales	6,708	100	n.a.		5,809	100	5,887	100	6,101	100	6,353	100	6,176	100
Region	Total Primary Aggregates													
	1973	%	1977	%	1985	%	1989	%	1993	%	1997	%	2001	%
South West	1,941		2,013		1,161	17	1,465	22	1,393	20	1,509	21	1,436	21
South East, London, East of England	n.a.		n.a.		408	6	405	6	476	7	416	6	418	6
East Midlands	1,908		1,690		1,916	29	2,045	30	2,087	30	2,217	30	2,265	33
West Midlands	416		423		381	6	367	5	356	5	631	9	453	6
Yorkshire & the Humber	588		n.a.		299	4	467	7	568	8	608	8	522	7
North East & North West	1,263		1,077		883	13	791	12	1,102	16	803	11	684	10
England	n.a.		n.a.		5,048	76	5,540	82	5,982	85	6,184	85	5,776	83
South Wales	665		n.a.		494	7	419	6	591	8	665	9	655	9
North Wales	647		n.a.		1,137	17	788	12	453	6	425	6	528	7
Wales	1,312		n.a.		1,631	24	1,207	18	1,044	15	1,090	15	1,184	17
England and Wales	n.a.		n.a.		6,679	100	6,747	100	7,026	100	7,274	100	6,960	100

1. Totals may not agree because of rounding.

2. n.a. - not available.

3. n.a.1 - not available but assumed to be negligible.

APPENDIX E - SURVEY FORMS A AND B



Aggregates Minerals Survey 2001 for England and Wales

FORM A: Quarries producing land-won natural aggregates¹, and marine wharves for sand and gravel and crushed rock during 2001

BACKGROUND INFORMATION

The Aggregate Minerals (AM) surveys, based at four-yearly intervals since 1973, provide an in-depth and up-to-date understanding of regional and national sales, consumption, distribution and permitted reserves of natural aggregates, and of selected alternative materials suitable for use as aggregates. The information is collected from aggregates producers for collation at Mineral Planning Authority (MPA), regional and national levels. The most recent survey was for the base year 1997 (AM97) and the collated results can be viewed and downloaded free from www.mineralsUK.com. This questionnaire relates to aggregates sales, distribution and reserves between January 1 and December 31, 2001. The national collation of this Survey is being undertaken by the British Geological Survey for the Department for Transport, Local Government and the Regions (DTLR) and the National Assembly for Wales (NAW). To simplify the Survey the questions have been harmonised with the statutory Annual Minerals Raised Inquiry (AMRI) undertaken on behalf of DTLR by the Office for National Statistics.

The results of the AM 2001 Survey will be used to monitor policies for the supply of aggregates

CONFIDENTIALITY

All sales and reserves information provided by respondents will be treated as strictly confidential and will not pass beyond that officer or those officers whom the Chief Planning Officer of this Authority designates to receive and process it. This includes Regional Aggregates Working Party (RAWP) Secretaries. It will not be used unless it is first collated by the officer(s) in such a way that individual company figures cannot be identified or unless consent of the company concerned is first obtained. The collated information may then be used for the purposes of the work of the RAWPs or for mineral planning purposes by the Authority.

Completed forms should be returned in envelopes marked 'Confidential' to:

MPA contact and address:

Please return the completed form no later than 31st March 2002

If you require further copies or have any queries regarding this form, please see www.mineralsUK.com or

Tel:

¹ Aggregates – Granular material used in construction. Aggregates can be natural, recycled or manufactured. This form relates to natural aggregates excavated and sold for the first time.

SITE DETAILS

NON-CONFIDENTIAL

SD1 Company

SD2 Quarry/wharf name

SD3 Address

SD4

SD5 Town

SD6 County

SD7 Postcode

SD8 Telephone

SD9 Fax

SD10 Email

Name of person
responsible for filling in
form

Date

Tel:

GUIDANCE NOTES - please read these notes before completing the form. This form applies to:

- (1) Quarries producing land-won natural aggregates either as a principal activity or as a subsidiary activity, such as a by-product of building stone or silica sand extraction.
- (2) Marine wharves at which marine-dredged sand and gravel are landed and processed.
- (3) Marine wharves at which crushed rock from outside England and Wales is landed.

- | | | | |
|-----|--|--|--------------------------|
| TM1 | Type of mineral working
(please tick box) | Quarry ⁽¹⁾ | <input type="checkbox"/> |
| | | Marine wharf sand and gravel ⁽²⁾ | <input type="checkbox"/> |
| | | Marine wharf crushed rock ⁽³⁾ | <input type="checkbox"/> |
| TM2 | Association status:
(please tick box(es)) | QPA member | <input type="checkbox"/> |
| | | BAA member | <input type="checkbox"/> |
| | | Both | <input type="checkbox"/> |
| | | Neither | <input type="checkbox"/> |
| TM3 | Status of quarry/wharf:
(please tick only one
box) | Active: In production, including from stockpiles, for some time during 2001 | <input type="checkbox"/> |
| | | Inactive: Worked in the past and still containing permitted reserves
[Complete only Question 1 for permitted reserves] | <input type="checkbox"/> |
| | | Inactive: Planning permission received, but yet to be worked
[Complete only Question 1 for permitted reserves] | <input type="checkbox"/> |
| | | Closed and containing no workable permitted reserves
[Complete only site details] | <input type="checkbox"/> |

To be completed by MPA:

NON-CONFIDENTIAL

MPA1	MPA name(s)			
MPA2	RAWP region			
NGR1	National Grid Reference (of centre of working, e.g. NG 456 789)			
		Code	Easting	Northing

INFORMATION ABOUT THE SITE

- DS1 Please tick here if the site is a borrow pit
- DS2 Please tick here if the site has received planning permission for an extension in 2001
- DS3 Please tick here if this is a new quarry granted planning permission in 2001

Please tick as appropriate if the operational area of the site is wholly or partly within any of the following environmental designations.

The site may fall within more than one designation:

- DS4 National Park (including The Broads and The New Forest)
- DS5 AONB
- DS6 SSSI/NNR DS7 Geological SSS DS8 Biological SSS
- DS9 SAC/SPA
- DS10 Green Belt

1. PERMITTED RESERVES

CONFIDENTIAL

DEFINITIONS

Permitted Reserves - Estimated reserves of aggregate minerals, including stockpiles, with planning permission that are saleable for aggregates and non-aggregate purposes at 31st December 2001. The figure should estimate **net saleable** reserves, taking account of likely losses during extraction and processing.

Active/Inactive - Sites are described as active where material was produced at any time during 2001 and as inactive when the site was not in production during that period. (Complete appropriate column).

Dormant site - A distinction is made between 'inactive' sites and 'dormant' sites. The latter is defined in the Environment Act 1995 as a mineral site where no mineral development has taken place to any substantial extent in, on, or under the site at any time in the period 22nd February 1982 and 6th June 1995. **MPA to complete this column.**

GUIDANCE NOTES - please read these notes before completing the form.

⁽¹⁾ Where possible estimate the amount of sand or gravel.

⁽²⁾ Where not known this can be estimated on the basis of typical proportions of sales of aggregate to non-aggregate.

		Thousand tonnes		
Sand and Gravel Reserves		Reserves at active sites	Reserves at inactive sites	Dormant sites (please tick)
1.1	Sand suitable for concreting a			
1.2	Other sand (including building and asphaltting sand) b			
1.3	Total sand (a+b) ¹			<input type="checkbox"/>
1.4	Total gravel ¹			
1.5	Total sand and gravel undifferentiated, where not included above			
1.6	Estimated % of total reserves allocated for non-aggregate use ²			
Crushed Rock Reserves		PSV - if appropriate (for PSV > 45) insert accepted PSV value for the site		
1.7	Limestone/Dolomite			<input type="checkbox"/>
1.8	Igneous and metamorphic rock			<input type="checkbox"/>
1.9	Sandstone (including gritstone, greywacke & quartzite)			<input type="checkbox"/>
1.10	Chalk			<input type="checkbox"/>
1.11	Ironstone			<input type="checkbox"/>
1.12	China clay waste			<input type="checkbox"/>
1.13	Estimated % of total reserves allocated for non-aggregate use ²			<input type="checkbox"/>

2. SALES BY PRODUCT

CONFIDENTIAL

2.1 Sand and Gravel

(Land won and marine-dredged)

INSTRUCTIONS

The term sand and gravel includes 'solid' sandstones and conglomerates that are loosely consolidated or weakly cemented and that are processed to produce sand and gravel, e.g. 'Sherwood Sandstone/Bunter' type sandstones and pebble beds. For sales of sand (fine aggregate) derived from crushing hard sandstone, e.g. Carboniferous type sandstones, please return under question 2.2.7. For sales of sand derived from china clay and ball clay extraction and processing, please return under questions 2.1.1 - 2.1.3, and 2.1.11.

GUIDANCE NOTES - please read these notes before completing the form (Section 2.1).

- 2.1 Questions 2.1 should be filled in for sales of sand and gravel excavated from a quarry, or sales only of marine dredged sand and gravel landed at a wharf, **excluding** minerals produced elsewhere and brought to the site for processing. Where aggregate is taken to another site for processing please estimate the sales attributable to the actual excavated site.
- 2.1.3 Including sand used in ready-mixed concrete, precast concrete products e.g. bricks, blocks, tiles, pavers and pipes.
- 2.1.5 Including gravel used in ready-mixed concrete, precast concrete products e.g. bricks, blocks, tiles, pavers and pipes.
- 2.1.6 Other aggregate uses include pipebedding, drainage media/layers.
- 2.1.7 Including 'as dug' material (hoggin).
- 2.1.11 Other industrial uses for sand (and gravel) include for chemicals, ceramics, water filtration, brickmaking (body/facing sand and calcium silicate bricks), sports and horticultural uses.

		Tonnes
Sand		
2.1.1	Sand produced for asphalt	<input style="width: 100%; height: 25px;" type="text"/>
2.1.2	Sand produced for use in mortar (building sand)	<input style="width: 100%; height: 25px;" type="text"/>
2.1.3	Sand produced for concreting	<input style="width: 100%; height: 25px;" type="text"/>
Gravel		
2.1.4	Gravel coated with bituminous binder (on or off site)	<input style="width: 100%; height: 25px;" type="text"/>
2.1.5	Gravel suitable for concrete aggregate (including gravel/sand mixes)	<input style="width: 100%; height: 25px;" type="text"/>
2.1.6	Other screened and graded gravels for other aggregate purposes	<input style="width: 100%; height: 25px;" type="text"/>
Sand and Gravel		
2.1.7	Sand and gravel for constructional fill	<input style="width: 100%; height: 25px;" type="text"/>
2.1.8	Total for aggregate use [T1]	<input style="width: 100%; height: 25px;" type="text"/>
Non-aggregate uses		
2.1.9	Sand for foundry purposes	<input style="width: 100%; height: 25px;" type="text"/>
2.1.10	Sand for glassmaking	<input style="width: 100%; height: 25px;" type="text"/>
2.1.11	Other industrial uses	<input style="width: 100%; height: 25px;" type="text"/>
2.1.12	Total for all non-aggregate uses	<input style="width: 100%; height: 25px;" type="text"/>

2. SALES BY PRODUCT

CONFIDENTIAL

2.2 Crushed Rock

(Land-won and wharves at which hard rock from outside England and Wales is landed)

PSV - if appropriate (for PSV > 45) insert accepted PSV value for the site	
--	--

Select mineral type:
(please tick box)

- Igneous rock (including metamorphic) Sandstone
 Limestone/Dolomite Chalk Ironstone

If more than one mineral type, please print an extra copy of Questions 2.2 and 3, for each, and attach onto back of form

DEFINITIONS
Limestone/Dolomite includes high magnesium limestone but not chalk.
Igneous rock includes andesite, basalt, diorite, dolerite, gabbro, gneiss, granite, granulite, hornfels, microgranite, rhyolite, schist, syenite, trachyte, tuff and waste rock from china clay extraction.
Sandstone includes greywacke, gritstone and quartzite.
Ironstone formerly of interest as a source of iron.

GUIDANCE NOTES - please read these notes before completing the form (Section 2.2).
 2.2 Questions 2.2 should be filled in for sales only of aggregate minerals excavated from the site, or landed at the wharf, and **excluding** materials produced elsewhere and brought to the site for processing. Where aggregate is taken to another site for processing please estimate the sales attributable to the actual excavated site.
 2.2.3 Includes granular sub-base (Types 1 and 2) for foundation work.
 2.2.6 Including coarse aggregate used in ready-mixed concrete, precast concrete products e.g. bricks, blocks, tiles, pavers
 2.2.7 Including fine aggregate used in ready-mixed concrete, precast concrete products e.g. bricks, blocks, tiles, pavers and pipes and asphalt filler
 2.2.8 Including pipebedding, drainage layers.
 2.2.10 Crushed and/or 'as dug' material; excluding Type 1 and 2 sub-base.
 2.2.12 Building stone includes dimension, ornamental, monumental and garden stor
 2.2.15 Where the product is calcined limestone or dolomite (lime/dolime) please report figure expressed as tonnage of original material used. Tonnage of lime, dolime and hydrated lime can be recalculated to carbonate by multiplying 1.78, 2.16 and 1.35 respectively
 2.2.16 Including lime/dolime production (other than for steel manufacture), chemicals, fillers, powders, glassmaking and animal feed.

	Tonnes
2.2.1 Crushed rock coated with bituminous binder (excluding weight of binder)	
2.2.2 Crushed rock transported to both company and external coating plants	
2.2.3 Crushed rock produced for uncoated roadstone and foundation work	
2.2.4 Rock chippings for surface dressing	
2.2.5 Railway ballast	
2.2.6 Coarse concrete aggregate	
2.2.7 Fine concrete aggregate/ mortar/asphalt	
2.2.8 Other screened and graded aggregates	
2.2.9 Armourstone	
2.2.10 Rock for constructional fill	
2.2.11 Total for aggregate use [T2]	

2.2 Crushed Rock continued

CONFIDENTIAL

Non-aggregate uses

Tonnes

2.2.12 Building stone (excluding reconstituted stone)

--

2.2.13 Cement manufacture

--

2.2.14 Agricultural use on the land and horticulture

--

2.2.15 Flux in iron and steel manufacture

--

2.2.16 For all other industrial uses

--

2.2.17 **Total for all non-aggregate uses**

--

3. SALES BY DESTINATION

CONFIDENTIAL

Sales by Destination for **Aggregate Use only****GUIDANCE NOTES**

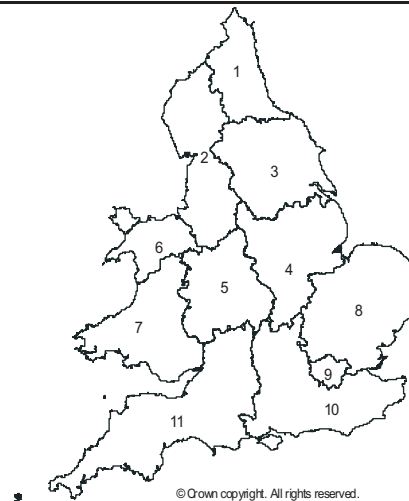
This information is very important for calculating inter-regional flows and consumption of aggregates. It is appreciated that sales destination will not always be known particularly for **collected** sales. **Please make estimates wherever possible.**

Estimate **for aggregate sales only** the quantities delivered to initial destinations, including those value-added sites (such as asphalt, ready-mix and precast concrete plants), during 2001 by **transport method** and **Region** for aggregates excavated and sold from the site.

Aggregate sales should equal totals in questions 2.1 [T1] & 2.2 [T2]. The new Regions are shown on the map and the MPAs in those Regions on the attached list.

Principal Mode of Transport- An estimate by % is acceptable if precise sales are not known. Please indicate whether **tonnes or percent** include only the principal mode of transport.

⁽¹⁾ Where all deliveries are by road just tick



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Region	Tonnes		Tonnes or Percent (delete as appropriate)		
	Sales of Aggregate		Principal Mode of transport		
	Sand and gravel	Crushed rock	Road ¹	Rail	Water
3.1 North East (1)					
3.2 North West (2)					
3.3 Yorkshire & The Humber (3)					
3.4 East Midlands (4)					
3.5 West Midlands (5)					
3.6 East of England (8)					
3.7 London (9)					
3.8 South East (10)					
3.9 South West (11)					
3.10 North Wales (6)					
3.11 South Wales (7)					
3.12 Scotland					
3.13 N. Ireland					
3.14 Republic of Ireland					
3.15 Mainland Europe					
3.16 Unknown					
3.17 Total tonnage (totals should equal totals in questions 2.1 [T1] and 2.2 [T2])					



Aggregates Minerals Survey 2001 for England and Wales

FORM B: Mineral Sites Granted and Refused Planning Permission, 1998-2001

To be completed by Mineral Planning Authority (MPA)

MPA name		
Completed by		
Date		Tel:
RAWP		

Please read Guidance Notes overleaf before completing the form.

Completed forms should be returned to the British Geological Survey, Keyworth, NG12 5GG (and copied to the relevant RAWP Secretary) for collation.

Sites Granted Planning Permission for aggregates extraction, 1998-2001

Year	Site Name	Mineral (2)	NGR (3)	Site Type (4)	Reserves (Thousand tonnes)	Nat. Park (5)	AONB (5)	SSSI (5)	SPA/SAC (5)	Green Belt (5)
1998	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
1999	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
2000	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
2001	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									

Please enter 1 in appropriate box(es)

Sites Refused Planning Permission for aggregates extraction, 1998-2001

Year	Site Name	Mineral (2)	NGR (3)	Site Type (4)	Reserves (Thousand tonnes)	Nat. Park (5)	AONB (5)	SSSI (5)	SPA/SAC (5)	Green Belt (5)
1998	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
1999	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
2000	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
2001	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									

Please enter 1 in appropriate box(es)

GUIDANCE NOTES - please read these notes before completing the form

- For the period 1/1/1998 to 31/12/2001 (inclusive)
- Mineral. Please choose from the following list:
 - Limestone (including dolomite)
 - Chalk
 - Igneous rock (including metamorphic rock)
 - Sandstone (includes greywacke, gritstone and quartzite)
 - Ironstone
 - Sand
 - Sand and gravel
- National Grid Reference (NGR) - of centre of site e.g. NG 456 789
- Site type. Choose from:
 - Extension - lateral
 - Extension - vertical
 - Increase in output
 - Borrow pit
 - New quarry (excluding borrow pit)
- Please enter 1 if the area for extraction within the planning permission (or refusal) is **wholly or partly** within the listed designation. A site may fall within more than one designation e.g. AONB and SSSI, and SSSI and SPA/SAC. National Parks includes The Broads and The New Forest.
- If required insert extra rows. To do this select an entire row by clicking on the row number below where you wish to insert the new row. Then click on Insert (on the menu bar) followed by Rows.

APPENDIX F - GLOSSARY OF TERMS & ABBREVIATIONS

Active/Inactive	Sites are described as active where material was produced at any time during 2001 and as inactive when the site was not in production during that period. Inactive sites include those that have been worked in the past and those that have yet to begin. The term 'inactive' now replaces the term 'dormant' used in previous surveys as the term 'dormant' has acquired a more specific meaning under the terms of the Planning & Compensation Act 1991 and the Environment Act 1995.
Aggregate	Granular or particulate material which is suitable for use (on its own or with the addition of cement, lime or bituminous binder) in construction as concrete, mortar, roadstone, asphalt or drainage courses, or for use as constructional fill or railway ballast (also referred to as 'construction aggregates').
Aggregate Mineral	Naturally-occurring material suitable for aggregate uses.
Primary Aggregate	Aggregate produced from naturally-occurring mineral deposits and used for the first time.
Secondary Aggregate	This term is becoming increasingly unclear and requires more rigorous definition. Aggregate which originates as a waste of other quarrying and mining operations, or from industrial processes (e.g. colliery waste or minestone, blastfurnace slag, power station ash, china clay waste, slate waste), but excluding chalk and clay/shale worked primarily for aggregate purposes. The only data on sales of secondary aggregates collected in the AM2001 survey was for china clay waste.
All Sites	All land-won mineral workings for the production of aggregates.
AONB	Area of Outstanding Natural Beauty designated under the National Parks and Access to the Countryside Act 1949 for the purposes of preserving and enhancing their natural beauty.
BAA	British Aggregates Association, the trade body for independent quarry companies.
Borrow pit	A site for the extraction of aggregate minerals over a limited period, for exclusive use in a specific construction project, which will usually be close to or contiguous with the site.
Brownfield site	Land previously developed for urban, industrial, military or infrastructure purposes or which has been damaged by previous use.
Construction fill	Fill material that will bear loads (e.g. in suitably designed embankments) as distinct from landfill to occupy voids and not specially intended to bear loads.
Dormant site	Dormant sites may be defined in accordance with the Planning & Compensation Act 1991 or the Environment Act 1995. The term defines a site where mineral planning permission was granted and implemented prior to, and on or subsequent to, the 1 July 1948 and respectively, at which no mineral working has been carried out to any substantial extent, on or under the site in the period preceding 1 May 1991 (Planning & Compensation Act 1991) or at any time in the period 22 February 1982 to ending 6 June 1995 (Environment Act 1995). It is unlawful to carry out mineral working on a dormant site until

Extension	full modern planning conditions have been approved by the relevant MPA. A site granted permission for the extraction of aggregate minerals for which there has been a change in the size (laterally or vertically) of the development from the original planning consent.
Green Belt	An area of land designated in development plans within which the fundamental aim is to prevent urban sprawl by keeping that land permanently open.
Greenfield site	Land previously in agriculture or non-urban/industrial use or which has not been damaged by a previous use.
Hoggin	A term mainly applied in southern England for 'as raised' clayey sand and gravel, used as dug for constructional fill for low-grade purposes, paths etc. ('A natural deposit of stony sand and gravel containing a small admixture of clay which is sufficient to hold the mass together without affecting the interlocking properties of the coarser particles.' Mineral Dossier on Sand and Gravel. Mineral Resources Consultative Committee, 1970).
New quarries	A totally new mineral operation which may be sited on a greenfield or brown-field site, or a combination of the two.
Landbank	A stock of planning permissions for the winning and working of minerals. It is composed of the sum of all permitted reserves at active and inactive sites at a given point in time, and for a given area.
Marine wharves	Points at which marine-dredged sand and gravel are landed and processed. Some marine wharves are used for landing crushed rock.
MPG	Minerals Planning Guidance.
MPA	Mineral Planning Authority, responsible for planning control over mineral working within its area.
Mt	Million tonnes (i.e. Megatonne).
National Park	National Parks are designated under the National Parks and Access to the Countryside Act 1949. Their aims are to conserve and enhance the natural beauty, wildlife and cultural heritage they contain, and to promote opportunities and enjoyment by the public of the areas they cover. An independent National Park Authority administers each Park. The Norfolk and Suffolk Broads are also administered by their own independent authority and enjoy protection equivalent to that of a National Park. The New Forest is currently being made a National Park.
Non-aggregates uses	Use of material suitable for aggregate purposes (see Aggregate above) for uses other than constructional and normal aggregate applications. Such uses could include ingredients in industrial processes, e.g. the manufacture of cement, chemicals, refractories, iron/steel, glass, ceramics, sugar, plastics, rubber, paper and sealants. It would not cover the use of finely crushed material used to manufacture concrete bricks, blocks, pipes and tiles (this is classed as aggregate). However, it would, for example, include lime use in bricks or blocks. The term also covers building, dimension, memorial, paving, walling and armour stone (e.g. for sea/river defenses) (i.e. in all cases where not crushed) and ground limestone or dolomite use in agricultural fertilizers and feedstuffs. The term 'industrial uses' is sometimes used synonymously with 'non-aggregate uses' but this term could imply the exclusion of building stone and mate-

	rial for agricultural use.
QPA	Quarry Products Association, the trade association which represents some 120 quarry operators, who together account for more than 90% of the quarried aggregate materials in Great Britain.
RAWP	Regional Aggregates Working Party.
SAC	Special Areas of Conservation designated in accordance with European Directive 92/43/EEC, adopted 21st May 1992, to provide measures to conserve natural habitats and associated wild fauna and flora. The directive is commonly known as the 'Habitats Directive.' SACs, together with SPAs (see below), will form part of 'Natura 2000,' a European wide network of areas of special nature conservation interest. SACs are also SSSIs.
SPA	Special Protection Areas designated in accordance with European Directive 79/409/EEC, adopted 2nd April 1979, to provide measures to conserve wild birds, their eggs and their habitats. This directive is commonly known as the 'Birds Directive.' SPAs are also SSSIs.
SSSI	Site of Special Scientific Interest designated by English Nature or the Countryside Council for Wales in accordance with the Wildlife and Countryside Act 1981 so as to conserve areas of special interest for their flora, fauna, geological or geomorphological interest.

APPENDIX G - BIBLIOGRAPHY

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Collation of the results of the 1985 Aggregate Minerals Survey: Department of the Environment, (undated).

National Collation of the results of the 1989 Aggregate Minerals Survey: Department of the Environment, 1991.

Minerals Planning Guidance: Guidelines for Aggregates Provision in England (MPG6): Department of the Environment, 1994.

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Minerals Planning Policy Wales. The National Assembly for Wales. December, 2000.

Collation of the results of the 1997 Aggregate Minerals Survey for England and Wales: British Geological Survey, 2000.

Survey of arisings and use of construction and demolition waste in England and Wales in 2001. Office of the Deputy Prime Minister, 2002.

Survey of arisings and use of secondary materials as aggregates in England and Wales in 2001. Office of the Deputy Prime Minister, 2002.

Each Regional Aggregate Working Party produces Annual Survey reports. The results of the AM2001 Survey will also appear in the RAWP Annual Reports for 2001. These are available from the RAWP Technical Secretaries (see Appendix H).

APPENDIX H - REGIONAL AGGREGATES WORKING PARTIES: SECRETARIES

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Andrew Lipinski
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Emily Richmond
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Viv Codd
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British Geological Survey, Economic Minerals and Geochemical Baseline
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Jo Mankelow — Electronic Collation Design and GIS Development

Marcus Sen — Database Design and Development

Stan Coats — Senior Systems Analyst

Sue Hobbs — Data Analysis

Becky White and Emma Bartlett — Report Design, Data Entry and Administration.

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Planning Consultant

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APPENDIX K - MINERAL PLANNING AUTHORITIES WITHIN RAWP REGION IN 2001

REGION	MPA 2002
SOUTH WEST RAWP	Bath and North East Somerset Council Bournemouth Borough Council Bristol City Council Cornwall County Council Dartmoor National Park Devon County Council Dorset County Council Exmoor National Park Gloucestershire County Council Isles of Scilly North Somerset Council Plymouth City Council Poole Borough Council Somerset County Council South Gloucestershire Council Swindon Borough Council Torbay Council Wiltshire County Council
SOUTH EAST RAWP	Bracknell Forest District Council Brighton and Hove Council Buckinghamshire County Council East Sussex County Council Hampshire County Council Isle of Wight Council Kent County Council Medway Council Milton Keynes Council New Forest National Park Oxfordshire County Council Portsmouth City Council Reading Borough Council Slough Borough Council Southampton City Council Surrey County Council West Berkshire District Council (Newbury District) West Sussex County Council Windsor & Maidenhead District Council Wokingham District Council
LONDON RAWP	London Borough of Barking & Dagenham London Borough of Barnet London Borough of Bexley London Borough of Brent London Borough of Bromley London Borough of Camden London Borough of Croydon London Borough of Ealing London Borough of Enfield London Borough of Greenwich London Borough of Hackney London Borough of Hammersmith and Fulham London Borough of Haringey London Borough of Harrow London Borough of Havering London Borough of Hillingdon London Borough of Hounslow London Borough of Islington London Borough of Kensington and Chelsea London Borough of Lambeth London Borough of Lewisham

REGION	MPA 2002
LONDON RAWP CONTINUED	London Borough of Merton London Borough of Newham London Borough of Redbridge London Borough of Richmond London Borough of Southwark London Borough of Sutton London Borough of Tower Hamlets London Borough of Waltham Forest London Borough of Wandsworth London Borough of Westminster London, City of Royal Borough of Kingston
EAST OF ENGLAND RAWP	Bedfordshire County Council Cambridgeshire County Council Essex County Council Hertfordshire County Council Luton Borough Council Norfolk Broads National Park Norfolk County Council Peterborough Southend-on-Sea Borough Council Suffolk County Council Thurrock Borough Council
EAST MIDLANDS RAWP	Derby City Council Derbyshire County Council Leicester City Council Leicestershire County Council Lincolnshire County Council Northamptonshire County Council Nottingham City Council Nottinghamshire County Council Peak District National Park Rutland CC DC
WEST MIDLANDS RAWP	Birmingham City Council Coventry City Council Dudley Metropolitan Borough Council Herefordshire Council Sandwell Metropolitan Borough Council Shropshire County Council Solihull Metropolitan Borough Council Staffordshire County Council Stoke-on-Trent City Council Telford and Wrekin Council Walsall Metropolitan Borough Council Warwickshire County Council Wolverhampton Metropolitan Borough Council Worcestershire County Council
NORTH WEST RAWP	Blackburn & Darwen Borough Council Blackpool Borough Council Bolton Metropolitan Borough Council Bury Metropolitan Borough Council Cheshire County Council Cumbria County Council Halton Borough Council Knowsley Metropolitan Borough Council Lake District National Park Lancashire County Council Liverpool City Council Manchester (City of) Oldham Metropolitan Borough Council Rochdale Metropolitan Borough Council Salford City Council Sefton Metropolitan Borough Council

REGION	MPA 2002
NORTH WEST RAWP CONTINUED	St. Helens Metropolitan Borough Council Stockport Metropolitan Borough Council Tameside Metropolitan Borough Council Trafford Metropolitan Borough Council Warrington Borough Council Wigan Metropolitan Borough Council Wirral Metropolitan Borough Council
YORKSHIRE & THE HUMBER RAWP	Barnsley Metropolitan Borough Council Bradford Metropolitan Borough Council Calderdale Metropolitan Borough Council City of York Council Doncaster Metropolitan Borough Council East Riding of Yorkshire Council Kingston upon Hull City Council Kirklees Metropolitan Borough Council Leeds City Council North East Lincolnshire Council North Lincolnshire Council North York Moors National Park North Yorkshire County Council Rotherham Metropolitan Borough Council Sheffield City Council Wakefield Metropolitan Borough Council Yorkshire Dales National Park
NORTH EAST RAWP	City of Sunderland Council Darlington Borough Council Durham County Council Gateshead Metropolitan Borough Council Hartlepool Borough Council Middlesbrough Borough Council Newcastle City Council North Tyneside Council Northumberland County Council Northumberland National Park Redcar and Cleveland BC South Tyneside Metropolitan Borough Council Stockton-on-Tees Metropolitan Borough Council
SOUTH WALES RAWP	Blaenau Gwent Brecon Beacons National Park Bridgend Caerphilly Cardiff (City of) Carmarthenshire Ceredigion Merthyr Tydfil Monmouthshire Neath Port Talbot Newport Pembrokeshire Pembrokeshire Coast National Park Powys Rhondda, Cynon, Taf (Taff) Swansea (City of) Torfaen Vale of Glamorgan
NORTH WALES RAWP	Conwy (Aberconwy & Colwyn) Denbighshire Flintshire Gwynedd Isle of Anglesey Snowdonia National Park Wrexham