

BUILDING FOR THE FUTURE

□ **New houses — in the right place, at the right price**

Successful, thriving communities need homes that everyone can afford. Increasingly, young people and key workers are not able to live close to their work place, and many that leave their jobs in vital public services cite the lack of affordable homes nearby as a major factor influencing the decision. Thus, an adequate supply of affordable houses is needed, especially in the South East. Each new home requires the use of about 60 tonnes of aggregate, with additional amounts for transport links and other infrastructure.



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□ **Meeting the demand for new construction**

In order to meet the demands for new homes and roads, together with transport links and additional infrastructure, sufficient supplies of aggregates are needed from sources close to development areas or locations where bulk transportation can be used. This requires continuing sustainable and environmentally sound production from quarries and making full use of recycled materials.



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□ **Economic growth and thriving communities**

The economic growth of the UK depends on the maintenance and development of its basic infrastructure. This means efficient and effective transportation, affordable housing for all, and investment in essential services in all regions. To make this happen, new or improved roads, rail links, airport facilities, homes, hospitals, schools, shops and offices are all needed. For their construction, an adequate supply of raw materials will be required.



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□ **What are the raw materials that we need and where do we get them from?**

Most raw materials in any construction project are ultimately derived from mineral resources quarried from the ground or dredged from the sea: almost all the concrete, asphalt, cement, bricks, clay, mortar, stone, glass and ceramics used in construction work are products of our own extractive industries. Recycled materials, such as construction and demolition waste and glass, are making a significant contribution to this supply, but new minerals will always be required.



Courtesy of the British Marine Aggregate Producers Association

By volume the most important materials required to build infrastructure are aggregate minerals i.e. rock that has been broken into small pieces, either naturally (sand and gravel) or artificially by crushing hard rocks such as granite or limestone (crushed rock aggregate). Each year, between 200 and 220 million tonnes of aggregates are produced in Great Britain for construction purposes.



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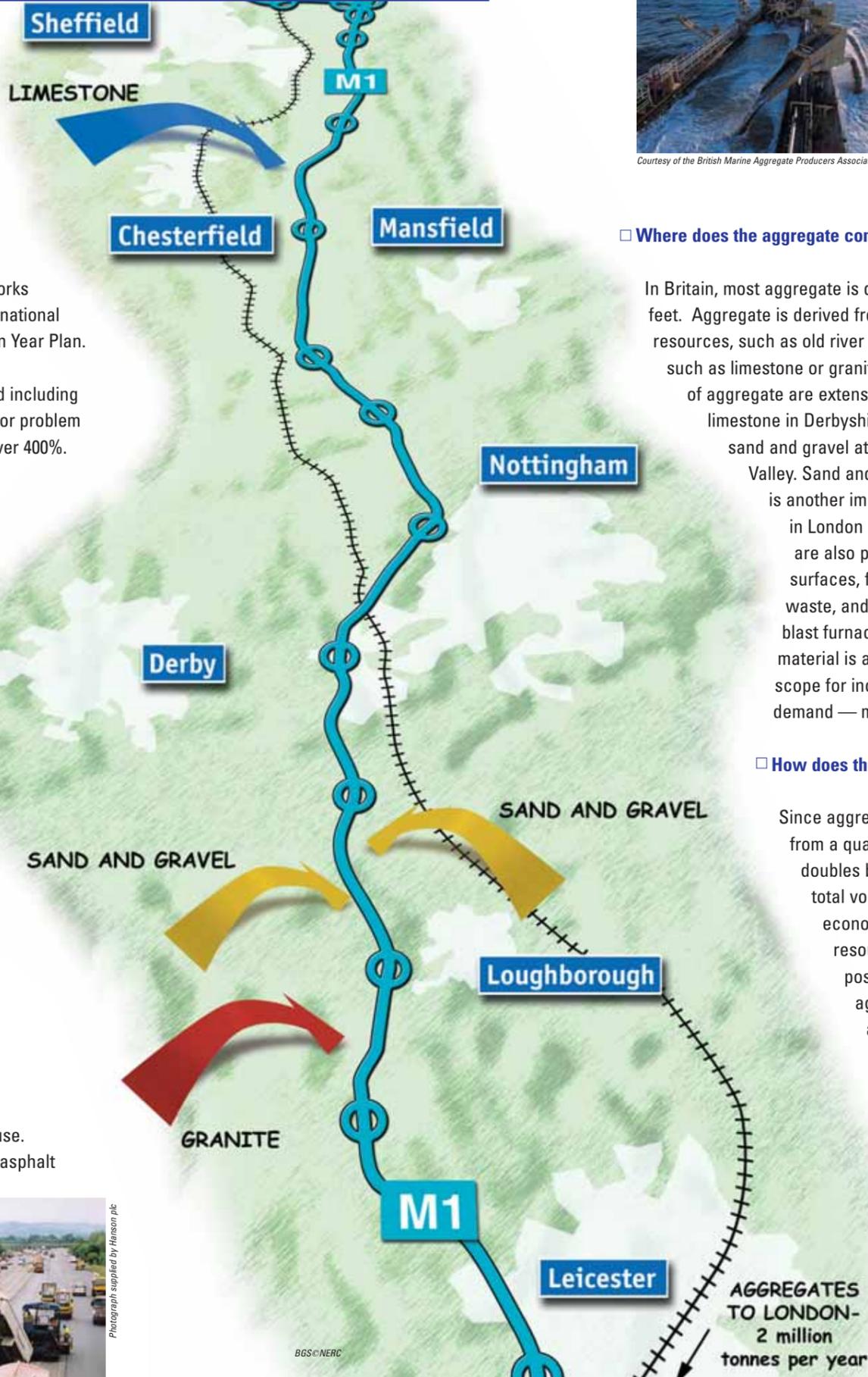
1960

Courtesy of the TRL Ltd



2000

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Courtesy of the British Marine Aggregate Producers Association



Picture by kind permission of RMC Aggregates (UK) Ltd

Improving the transport network

In July 2000 the government introduced a Ten Year Plan for improving transport networks in England. This plan comprises the spending of £67 billion on railways, £25 billion on national roads, £61 billion on local transport and £35 billion on transport in London over the Ten Year Plan.

In December 2002 Government announced a further list of projects to be implemented including improvements to the M1 and M6 and a number of new bypasses. Congestion is a major problem on many routes. Between 1960 and 2000, the traffic on Britain's roads increased by over 400%.

Government has set up the Strategic Rail Authority (SRA) to take responsibility for improving the rail network. In January 2002 the SRA published its first long term Strategic Plan.

How much raw material will be required?

Although demand for aggregates for roads has declined by over a third since the late 1980s there will still be a continuing need for aggregates to deliver the transport improvements that Government is planning for.

Despite the greater use of new materials and construction methods, such as laying thinner but stronger road surfaces, 1 km of single motorway lane can still use up to 7500 tonnes of aggregate.

If the entire length of the M1 between Leicester and Sheffield—a distance of 110 km—were to be widened with an extra lane in each direction about 1.65 million tonnes of aggregates would be required.

It is also estimated that the construction of the Channel Tunnel Rail Link will require up to 6 million tonnes of aggregates.

What sort of aggregate is needed?

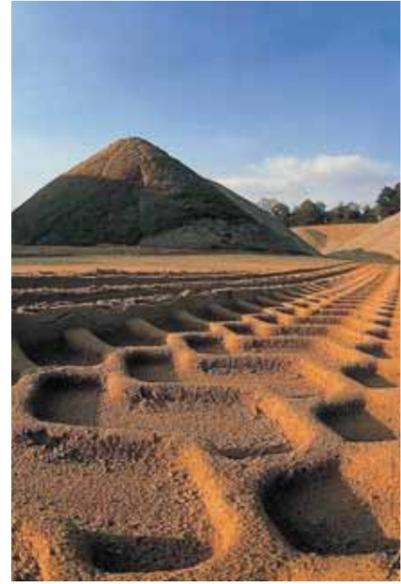
Building a road requires special types of aggregates, depending on their particular use. The base of the road is made from loose aggregate, and this is covered by layers of asphalt or concrete. All the aggregate used in the construction must be sound enough to withstand repeated freezing and thawing or filtration of water through it. It must be strong enough to take the load of the traffic, and the surface aggregate used in the asphalt must be hard enough to withstand continuous abrasion by tyres. Some surfaces also have properties which help to reduce traffic noise, reduce spray, decrease skidding whilst braking or improve the ride quality. There are rigorous tests that assess which aggregates, whether newly dug or recycled, are suitable for different uses in road construction.



Photograph supplied by Hanson plc

Where does the aggregate come from?

In Britain, most aggregate is quarried from the rocks beneath our feet. Aggregate is derived from natural sand and gravel resources, such as old river gravels, or from crushed hard rock, such as limestone or granite. In the East Midlands, both types of aggregate are extensively produced: for example, limestone in Derbyshire, igneous rock in Leicestershire, sand and gravel at several locations in the Trent Valley. Sand and gravel dredged from the sea bed is another important source of supply, especially in London and the South East. Aggregates are also produced by recycling old road surfaces, from construction and demolition waste, and from secondary sources such as blast furnace slag. However, much of this material is already being used and there is little scope for increasing its contribution to demand — most has to be new material.



Courtesy of Lafarge Aggregates Ltd

How does the aggregate get to the construction site?

Since aggregate is very bulky, a large part of its cost is due to transportation from a quarry to the construction site. The cost of a lorry load of gravel doubles by moving it 40 km. In England and Wales in 2001, 91% of the total volume of aggregate sales were transported by road. Hence it is economically and environmentally important to seek suitable resources close to the construction site. However, this may not be possible as in England and Wales sources of rock suitable for aggregates generally occur at some distance from where they are needed. In this case, transport by rail or sea is more efficient and environmentally preferable.



Courtesy of Lafarge Aggregates Ltd