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## Chapter 9

# Secondary and Recycled Aggregates

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*Pile of crushed bricks at Tarmac's recycling facility at Colwick Industrial Estate*

## Introduction

- 9.1 In order to meet one of the main themes outlined in the UK Sustainable Strategy, 'Prudent Use of Natural Resources', there is a clear need to maximise the use of secondary and recycled materials. This reduces the amount of waste material going to landfill and helps conserve primary aggregates. The Government is keen to promote a much greater use of secondary and recycled aggregates and has backed this up with fiscal measures which now tax most waste materials going to landfill and also taxes primary aggregates (see Chapter 6, Para. 6.25 for details).
- 9.2 The terms 'recycled' and 'secondary' aggregate are often used interchangeably. The term 'recycled aggregates' refers to aggregates that have been used previously in construction. Recycled aggregates can comprise construction and demolition wastes, asphalt road planings and used railway ballast.
- 9.3 'Secondary aggregates' are by-products of other processes, and will not have been used previously as aggregates. They include colliery spoil, china clay waste, slate waste, power station ashes, blast furnace and steel slags, incinerator ashes and foundry sands.
- 9.4 The Government's good practice guide 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production' estimates that around 70 million tonnes of demolition and construction waste, and almost 100 million tonnes of mining and quarrying waste are generated each year. It is the aim of this guidance to reduce disposal requirements. Although there is considerable potential for using these wastes as aggregates, large quantities either remain on site or are landfilled. There is some overlap with the Waste Local Plan which contains specific policies for aggregate recycling centres and identifies preferred areas where permanent aggregate recycling centred will be permitted. This Chapter should therefore be read in conjunction with Chapter 5 of the Waste Local Plan.

## Secondary Aggregates

### Mineral Wastes - Colliery Spoil

- 9.5 At a national level, mineral wastes left from the extraction of china clay and slate exist as unsightly tips and have a huge potential as a source of aggregate. However, these materials are generally located in the south-west and North Wales, making them relatively distant from most potential markets.
- 9.6 On a local level, colliery spoil can make a significant contribution towards meeting aggregate needs, although generally restricted to lower grade uses, such as bulk fill. Colliery spoil for aggregate use can be obtained either by reworking spoil tips or by collecting the 'dry dirt' discard directly from the coal preparation plant. At some collieries the potential availability of spoil may be very limited because nearly all the dry dirt is needed to construct and cap slurry lagoons. Colliery spoil has not been used as bulk fill in Nottinghamshire for many years, but in the light of the new tax regimes on landfill and primary aggregates it may become more economically attractive.

- 9.7 Apart from the reduction in visual blight the main environmental impact of removing spoil directly from the coal preparation plant will be the HGV traffic taking the spoil to the construction project. Proposals for moving spoil off-site for use as aggregate will therefore need to take account of Policies M3.13-3.15.
- 9.8 In recent years there has been an increase in Nottinghamshire in the number colliery spoil tips reworked in order to recover coal. The principles and impact of such development are detailed in Chapter 12 (see Policy M12.6). Although in recent years no colliery tips in the County have been reworked for secondary aggregates, if any such proposals are submitted they will need to be in accordance with Policy M12.6.

### **Industrial Waste - Power Station Ash**

- 9.9 Industrial by-products, which can be used as aggregate, include slag from the iron and steel industry and ash from coal fired power stations. There is no slag produced in Nottinghamshire but large quantities of ash are produced from the County's four coal fired power stations along the Trent Valley.
- 9.10 Power station ash comprises Furnace Bottom Ash (FBA) and Pulverised Fuel Ash (PFA). FBA is a coarse clinker and is used to manufacture lightweight building blocks where demand generally exceeds supply. PFA, which is finer and similar in consistency to sand, is used in cement, as a concrete aggregate and as a low-density bulk fill. Production of PFA has generally exceeded demand for these uses and the surplus is either pumped into sand and gravel lagoons (see Chapter 6) or disposed of onsite. Recent figures show that over a million tonnes of FBA and PFA are produced annually in Nottinghamshire. Of this FBA makes up approximately 15% of production with all being sold for building purposes. Figures for PFA sales are more uncertain but the current trend is towards more being sold rather than landfilled.

### **River Dredgings**

- 9.11 Approximately 200,000 tonnes of sand, silt, marl and gravel are dredged from the River Trent by British Waterways every year in order to maintain a navigation channel. River dredgings can be used as an aggregate either as bulk fill or, if of suitable quality and processed, used in concrete. Dredgings that cannot be used are normally spread on land close to the riverbank, provided that this does not impact upon the floodplain, or disposed of in sand and gravel lagoons.
- 9.12 The use of river dredgings as a secondary aggregate usually occurs in two ways. First, dredgings may be stockpiled on the riverbank until there is sufficient material to justify processing through a mobile plant or through a plant at a nearby sand and gravel quarry. Alternatively, dredgings disposed of in lagoons may be periodically re-excavated. The latter may have the benefit of creating further disposal capacity, but may mean disturbing reclaimed land or land that has developed a significant nature conservation interest. One of the main planning issues concerns traffic implications, as many existing dredging sites have poor road access, which may make removal by barge the only acceptable option.

- 9.13 Spreading of dredgings, disposal to foreshore and surface tipping normally takes place as 'permitted development' in accordance with the provisions of the General Permitted Development Order. It is only where dredgings are disposed of in mineral workings that planning permission is usually required, along with a Waste Disposal Licence.
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#### **POLICY M9.1 STOCKPILING OF DREDGINGS**

**The County Council will permit proposals for the stocking of river dredgings prior to their use as aggregate subject to:**

- (a) evidence of a justifiable operational need for stocking at the proposed location;**
  - (b) provision of satisfactory arrangements for the removal and transport of dredgings from the site;**
  - (c) the screening and landscaping of the site;**
  - (d) measures to protect the environment and local amenity from an unacceptable impact,**
  - (e) measures to protect the integrity of the floodplain.**
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#### **POLICY M9.2 RE-EXCAVATION OF TIPPED DREDGINGS**

**The County Council will permit the re-excavation of dredgings which:**

- (a) fulfils a justifiable need for the creation of additional tipping capacity;**
  - (b) does not result in an unacceptable impact upon the environment or local amenity;**
  - (c) provides satisfactory arrangements for the removal and transport of the dredgings from the site.**
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## **Recycled Aggregates**

### **Construction and Demolition Waste**

- 9.14 Targets set by Government for diverting waste away from landfill has resulted in the re-use of construction and demolition waste being encouraged more and more. Recycled construction and demolition waste is likely to play an increasingly prominent role as a source of aggregates in the future. Most construction and demolition waste can be recycled for use as an aggregate. Crushed bricks and rubble can be used on building sites for levelling purposes, or graded for use in road construction. For maximum use as a secondary aggregate, construction and demolition waste needs to be crushed, screened and graded. This can be done on-site by a temporary mobile plant, or the waste can be taken off-site to a permanent recycling plant. Permanent recycling plants need planning permission and are treated

as a waste management facility (see Waste Local Plan). Mobile plants normally only need planning permission if they are to remain in-situ for more than 28 days.

- 9.15 There are no reliable statistics on the production of secondary aggregates from construction and demolition waste. However, since 1996, when the landfill tax came into effect, the number of permanent aggregate recycling centres has increased in the County from one to six. This suggests that a much greater use is being made in response to these fiscal measures

### **Rail Ballast**

- 9.16 Worn out rail ballast is taken by rail to recycling centres for crushing into aggregate. Being made of high quality limestone or granite it can be re-processed for high-grade uses. In Nottinghamshire there is just one railway ballast recycling centre, which is located at Toton. A planning permission granted in 2001 to expand the site will allow 100,000 tonnes of aggregate to be processed per annum. In planning terms these operations are equivalent to a secondary aggregate plant (see Waste Local Plan). The main difference is that whilst the used ballast comes in by rail, it is likely to leave the site by road in order to supply local markets.

### **Road Surfaces**

- 9.17 Increased re-use is being made of surfacing, road planings and other materials lifted from roads in the course of maintenance. In the recent past road planings were just used as bulkfill but now they can be re-processed into blacktop. Operators are encouraged to recycle road planings rather than dispose of them at a landfill site.

