

5. Aggregate Minerals

5.1 Introduction

- 5.1.1 Aggregate minerals are essential raw materials for the construction industry. Naturally occurring materials, such as sand, gravel and hard rock are commonly referred to as Primary Aggregates. By-product wastes and synthetic materials which can be used for aggregate purposes can be regarded as Secondary Aggregates.
- 5.1.2 In North Yorkshire, sand and gravel is used primarily in the production of concrete. Soft sand has applications in industry, building and asphalt manufacture. Crushed rock is used, primarily, as a roadstone and in concrete although small quantities are used for non-aggregate purposes, including agricultural and as a flux in iron and steel manufacture.
- 5.1.3 This chapter is concerned with turning the strategy developed in Chapter 3 into specific proposals. While the Preferred Areas have been selected to minimise conflict with local environmental quality, there are certain sites which have the potential to adversely impact on particular aspects of local environmental quality. However, until a planning application is submitted these impacts cannot be predicted. Conversely, restoration of the Preferred Areas offers opportunities for improving local environmental quality and natural resources through, for example, increasing tree cover, habitat creation and increasing access to the countryside.

5.2 Sand and Gravel

Geology

- 5.2.1 Sand and gravel resources in the County are situated mainly in the lowland areas along the A1 corridor and in the Vale of Pickering, where glacial and fluvio-glacial sands and gravels, together with fluvial deposits, occur. Older deposits of sand crop out south of Selby and north of the M62 and near the southern fringe of the Vale of Pickering.

Production and Consumption

- 5.2.2 Sand and gravel production in North Yorkshire has averaged about 2.5 million tonnes per annum in recent years. About 60% of this output is consumed within the County. The bulk of the remainder is exported to the Teesside/Co Durham market area with smaller quantities going into the West/South/East Yorkshire/Humber market area.
- 5.2.3 The County's sand and gravel resource can be split into two distinct areas, reflecting the market destination of the quarried material. Production of gravel and sharp sand is concentrated in two geographical areas - around Catterick and Cleasby which predominantly supplies Teesside and Co Durham, and the central area of the County (including the Vale of Pickering) which predominantly serves the County market, West and South and Yorkshire, and the Humber. Additionally there are deposits of building sand which are principally located in Selby

District and the Vale of Pickering. Building sand only accounts for around 6% of the County's total sand and gravel output.

Future Demand

- 5.2.4 Future demand for sand and gravel is calculated by forecasting demand at the national and regional level (as set out in MPG6) and apportioning to a sub-regional level, based on a variety of factors. The sub-regional apportionment is the subject of a recommendation from the Regional Planning Conference following advice from the Regional Aggregates Working Party.
- 5.2.5 The Yorkshire and Humberside Regional Planning Conference has commended a sand and gravel apportionment figure of 32 million tonnes for North Yorkshire for the period 1992-2006. This figure represents North Yorkshire's proportionate share of regional production based on the average of sub-regional production levels for the years 1991 - 1993. Expressed on an annual basis, this results in an annual output averaging 2.13 million tonnes over the period 1992 - 2006, which constitutes a reduction from the recent annual production level of 2.7 million tonnes.
- 5.2.6 Government guidance also requires mineral planning authorities to maintain at all times a stock of reserves with planning permission (a landbank) sufficient for at least 7 years supply. The Plan, therefore, seeks to ensure that a landbank of at least 7 years is maintained each year over the Plan period and at the end of the Plan period, effectively providing for production until the end of 2013. This landbank requirement supersedes the 10 year landbank requirement in County Structure Plan Policy M1(l). The cumulative production requirement of the Plan is for the 20 year period 1994-2013, and the Plan makes provision for the maintenance of a 7 year landbank by identifying "Preferred Areas" for future workings.
- 5.2.7 In making provision for future workings the Plan seeks to maintain two landbanks for sand and gravel which reflect the distinct markets referred to in paragraph 5.2.3 and a landbank for building sand. Appendix 1 provides a fuller explanation of the sub-regional apportionment for the Plan period. The total provision to be made for sand and gravel is 42 million tonnes for the period 1994-2013. This provision has been divided between the landbanks according to recent production levels.

*Policy 5/1
Sand & Gravel
Landbanks*

The County Council will identify three landbanks for calculating sand and gravel provision, as follows:-

- a) Sand and gravel (Northwards);
- b) Sand and gravel (Southwards); and
- c) Building sand.

In determining which of the landbanks for sand and gravel a site falls within, the County Council will take into account the geographical location of the site and the likely external markets for the material.

Table 1 : Sand and Gravel Requirement 1994-2013

Sand & Gravel (Northwards)	13 million tonnes
Sand & Gravel (Southwards)	26 million tonnes
Building Sand	3 million tonnes
Total Sand & Gravel	42 million tonnes

*Policy 5/2
Sand & Gravel
Provision*

Provision will be made for the extraction of 42 million tonnes of sand and gravel between 1994 and 2013.

Table 2 : Sand & Gravel Provision 1994-2013

A. Sand & Gravel (Northwards)	
Requirement	= 13.0 million tonnes
Land with planning permission	= 16.4 million tonnes
Shortfall	= Nil

B. Sand & Gravel (Southwards)	
Requirement	= 26.0 million tonnes
Land with planning permission	= 17.2 million tonnes
Shortfall	= 8.8 million tonnes

C. Building Sand	
Requirement	= 3.0 million tonnes
Land with planning permission	= 3.1 million tonnes
Shortfall	= Nil

- 5.2.8 As indicated in Table 2 there is no shortfall in sand and gravel provision in the Northwards production area (centred around Catterick and Cleasby) nor any identified shortfall in building sand provision. The Plan will, therefore, only identify land in the form of Preferred Areas to meet the 8.8 million tonnes shortfall from the Sand and Gravel (Southwards) production area.
- 5.2.9 While the Plan seeks to make provision for forecast demand during and at the end of the Plan period, Areas of Search have also been identified in each of the two main sand and gravel production areas. These are intended to provide for flexibility should a Preferred Area not be able to make its expected contribution to supply.
- 5.2.10 It is not considered necessary to make such contingency provisions for building sand due to the extent of permitted

reserves and the small scale level of production. However, should an unforeseen demand arise during the Plan period then any consequent planning application will be determined on its merits against the policies of this Plan.

*Meeting the Need for
Sand and Gravel*

- 5.2.11 In selecting Preferred Areas for sand and gravel extraction in the Southwards production area, the County Council has applied a broad environmental analysis (Appendix 2) to the range of sites put forward by operators and landowners. The Areas of Search have principally been defined on the basis of the most detailed geological information available. Any planning application would need to be acceptable in environmental and amenity terms before permission could be granted.

<i>Policy 5/3 Sand and Gravel (Southwards) Preferred Areas</i>	Provision is made through Preferred Areas for the extraction of 8.8 million tonnes of sand and gravel.
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The following Preferred Areas have been identified:-

- Extension to Marfield Quarry (Inset No 1)
(Harrogate District)
- Extension to Ure Valley Quarry (Inset No 2)
(Hambleton/Harrogate Districts)
- Extension to Allerton Park Quarry (Inset No 3)
(Harrogate District)
- Extension to Wykeham Quarry (Inset No 4)
(Scarborough District)

The contribution from these Preferred Areas is an estimated 11 million tonnes.

- 5.2.12 Two Areas of Search for sand and gravel are identified in the Plan:-

- Sand and Gravel (Northwards)
 - South of Catterick (Inset No 10)
- Sand and Gravel (Southwards)
 - East of A1 (Inset No11)

It is recognised that, in order to achieve satisfactory access, development within the South of Catterick Area of Search is likely to be dependent upon the timetable for the upgrading of the A1 between Leeming Bar and Catterick. Within the Area of Search East of A1 the County Council will expect developers to investigate the opportunity for transporting material by rail

5.3 Crushed Rock

Geology

- 5.3.1 The crushed rock output within the Plan area comes from

limestone deposited in three different geological periods with a small contribution from chalk. Carboniferous limestone crops out around the fringes of the Yorkshire Dales National Park. Magnesian limestone crops out in a narrow band running north-south through the County from Darlington towards Doncaster. Jurassic limestone and chalk crop out on the fringes of the Vale of Pickering and in the Yorkshire Wolds.

Production and Consumption

- 5.3.2 Crushed rock production in recent years within North Yorkshire has fluctuated between 8.5 and 10.5 million tonnes while non-aggregate rock sales have fluctuated between 250,000 and 800,000 tonnes. Less than half of all rock is consumed within the County. Over a third is exported to West Yorkshire. North Yorkshire is the fourth largest producer of crushed rock within England and Wales. A steady 47% of this output has come from quarries in the Yorkshire Dales National Park in the period 1991-1993.

Future Demand

- 5.3.3 The Yorkshire and Humberside Regional Planning Conference has commended a crushed rock apportionment figure for North Yorkshire of 176 million tonnes for the period 1992-2006. In the same way as with sand and gravel, future provision for crushed rock has been apportioned following advice from YHRAWP on the basis of North Yorkshire's proportionate share of regional production over the four year period 1989 - 1993. The apportionment figure for North Yorkshire envisages a significant increase in crushed rock output in relation to recent and historic levels and this situation will need to be kept under review.
- 5.3.4 In contrast to the production of sand and gravel, the National Parks, particularly the Yorkshire Dales, make a major contribution to the County's crushed rock output. The 176 million tonnes for the period to 2006, therefore, requires to be apportioned to sub-county level. In line with the strategy in this Plan, which seeks to promote a more sustainable approach to minerals planning, the sub-county requirements have been calculated so as to reduce, over time, the proportion of rock traditionally produced within the Yorkshire Dales. The figure for the Yorkshire Dales National Park therefore assumes that annual production will remain unchanged at the average of 1991-1993 levels. The extent of workable deposits within the North York Moors National Park is so limited that output from this area is not expected to make a major contribution to meeting future aggregate requirements and has been ignored for statistical purposes.
- 5.3.5 Government guidance requires a landbank to be maintained for crushed rock. It does not recommend a specific timescale but does indicate that it should be for longer than 7 years. The Plan seeks to make provision for a landbank of at least 10 years, such that the cumulative production requirement of the Plan is for the 23 year period 1994-2016. This supersedes the landbank requirement of 15 years set down in County Structure Plan Policy M1(I). Appendix 1 details the split of the county apportionment between the Plan Area and the Yorkshire Dales National Park. Allowing for continued production from the

National Park at the assumed level, the total provision to be made for crushed rock in this Plan is 196 million tonnes.

*Policy 5/4
Crushed Rock Provision*

Provision will be made between 1994 and 2016 for the extraction of 196 million tonnes of crushed rock.

Table 3 : Crushed Rock Provision 1994-2016

Crushed Rock requirement = 196 million tonnes

Land with planning permission = 143 million tonnes

Shortfall = 53 million tonnes

- 5.3.6 The shortfall of crushed rock is identified as 53 million tonnes in Table 3. The Plan will identify land in the form of Preferred Areas and Areas of Search to meet the forecast shortfall in crushed rock requirements. The County Council is using the Areas of Search approach to permit flexibility and because of the uncertainty in crushed rock requirements post 2006.

*Meeting the Need for
Crushed Rock*

- 5.3.7 The County Council has applied a broad environmental appraisal to the sites put forward by operators and landowners in selecting Preferred Areas. As with sand and gravel, the crushed rock Areas of Search have principally been defined on the basis of geological information. It is recognised that there are likely to be significant environmental, transport and amenity constraints to developing new crushed rock quarries in these Areas. Consequently, two of the Areas have been drawn over wide geographical areas to assist identification of potential sites which are sufficiently free of constraints.

- 5.3.8 The MPG6 forecasts are well in excess of annual output in recent years. In order to attain the crushed rock apportionment figure of 196 million tonnes, annual output from quarries in the Plan area would need to average 9 million tonnes over the period 2002-2006. This is substantially higher than the highest output attained in recent years of 5.4 million tonnes in 1989.

- 5.3.9 Consequently the County Council is identifying Preferred Areas to help maintain existing production levels and will keep the shortfall situation under review. The County Council is not seeking to abrogate its responsibilities in respect of providing for the sub-regional apportionment for crushed rock. Rather the Council is concerned that to make specific provision through Preferred Areas for the whole of the forecast shortfall would be unsustainable in relation to recent annual rates of output. Consequently Areas of Search have been identified to provide for flexibility of decision making later in the Plan period or should a Preferred Area not be able to meet its expected contribution to supply. However, unless annual production increases significantly to levels close to those envisaged in the sub-regional apportionment, new quarries in Areas of Search should not be required either during the Plan period or to

maintain the landbank at the end of the Plan period.

*Policy 5/5
Crushed Rock
Preferred Areas and
Areas of Search*

Provision is made through Preferred Areas and Areas of Search for the extraction of 53 million tonnes of crushed rock.

5.3.10 The following sites are identified as Preferred Areas:-

- Extension to Gebdykes Quarry (Inset No 5)
(Hambleton District)
- Extension to Newbridge Quarry (Inset No 6)
(Ryedale District)
- Extension to Foxcliffe Quarry (Inset No 7)
(Selby District)
- Extension to Darrington/
Cridling Stubbs Quarries (Inset No 8)
(Selby District)
- Long Lane, Barnsdale Bar (Inset No 9)
(Selby District)

The contribution from these Preferred Areas is an estimated 15 million tonnes. The County Council is also considering planning applications at Potgate Quarry, North Stainley (Harrogate District), Barton Quarry (Richmondshire District) and Whitewall Quarry (Ryedale District) which, if approved, would reduce the currently identified 53 million tonnes shortfall by 9 million tonnes..

5.3.11 Three Areas of Search for crushed rock are identified in the Plan:-

- Ripon/Masham (Inset No 12)
- Tadcaster/Knottingley (Inset No 13)
- Craven Lowlands (Inset No 14)

The Craven Lowlands is an area of high landscape quality abutting the Yorkshire Dales National Park. There are no mineral workings in this Area of Search. Any future working would, therefore, require a greenfield location. There are very significant landscape and highway constraints to working in this Area and the County Council will, therefore, expect any proposal to be sited so as to minimise the impact of quarry development on the landscape and, where practicable, to utilise rail transport for quarried products. Where such transport is not practicable, proposals should address any impacts that may arise through road haulage of quarry products.

5.4 Borrow Pits

5.4.1 Borrow pits are used to supply material solely in connection with a specific construction or engineering project. Workings are usually sited in close proximity to the project so as not to create substantial traffic generation by importing material along public roads. The voids created are backfilled with surplus or unusable material and the land restored over a much shorter

timescale than with a normal quarry. A planning condition is usually imposed tying the date of restoration to the completion of the construction project, eg the opening of a new road. There are also other environmental benefits associated with the use of borrow pits - utilisation of a resource that might otherwise be sterilised, discouraging the use of better grade material for low grade use, protecting the countryside from new or expanded quarries and minimising the traffic impact on local roads and residential areas.

- 5.4.2 The upgrading of the A1 has resulted in a number of borrow pit excavations to the east of Knaresborough. As work progresses on the A1 project and new contracts are let, it is expected that further applications will be submitted. Other recent borrow pit excavations have been permitted in connection with the Ripon Bypass and improvement works to the A65.
- 5.4.3 The County Council recognises that the use of borrow pits can offer operational and environmental benefits but seeks to ensure that such intensive operations are properly supervised. The County Council intends to continue favouring borrow pits as a means of supplying construction projects where there would not be any adverse impact on features of acknowledged importance, subject to environmental safeguards comparable to those required for longer term extraction proposals, and provided that sites are identified at the earliest possible time in a project's development and that the proposals have paid sufficient attention to restoration and aftercare proposals. Where restoration to agriculture is proposed, Policy 4/16 requires the best practicable standard of restoration to be provided

<p><i>Policy 5/6 Borrow Pits</i></p>	<p>In considering applications for borrow pits the Mineral Planning Authority will need to be satisfied that:-</p> <ul style="list-style-type: none"> i) it is not feasible to use secondary materials; ii) the site is located adjacent to the major construction or engineering project it is intended to supply; iii) the proposal would result in overriding environmental benefits compared with obtaining the material from existing sources; iv) the site can be restored within the associated project timescale to the satisfaction of the Mineral Planning Authority; and v) the use of the site will minimise or avoid use of public roads in the area.
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5.5 *Alternative Aggregate Sources*

Power Station Ash

5.5.1 At the present time there are three main sources of supply of secondary and recycled aggregate materials within the County; power station ash, colliery spoil and recycled construction/demolition wastes.

5.5.2 In volume terms, the most important source of secondary aggregates within the County is power station ash, which comprises furnace bottom ash (FBA) and pulverised fuel ash (PFA). The ash is the incombustible part of the pulverised coal which is burned in power stations to provide heat for steam raising. The coal fired power stations in the Aire Valley, Drax and Eggborough, produce over 2½ million tonnes of ash each year around half of which is sold. All FBA is sold for uses which include the manufacture of building blocks. PFA is used for block-making, cement replacement, blended cements, grouting, bulk fill and other purposes. The remaining unsold ash is disposed of at Gale Common and Barlow Ash Disposal sites. The extraction of relatively high value cenospheres (floaters) from the Gale Common site provides a raw material for several industries. A further 200,000 tonnes of FBA from Ferrybridge Power Station, West Yorkshire, is also sold each year following extraction from the Brotherton Ings Ash Disposal site in North Yorkshire. The County Council will continue to fully encourage and support the use of ash waste products.

Colliery Spoil

5.5.3 Colliery spoil is the waste material from the process of extracting deep mined coal (see Chapter 6). Colliery spoil can be used as bulk fill in local construction schemes (an example is the construction of the Sherburn in Elmet Bypass). As an exception to the terms of the Selby Coalfield planning permission, the County Council has recently introduced procedures to facilitate consideration of requests by the coalfield operator to supply colliery spoil to local construction projects. It is likely that large quantities of colliery spoil will continue to be produced as a result of trends in output and unpredictable geological conditions, thereby ensuring that significant quantities of spoil will continue to be available for potential use as a substitute for naturally occurring aggregates. Approximately 1 million tonnes of colliery spoil is also used each year for the construction of banking at Gale Common ash disposal site.

*Recycled Construction/
Demolition Waste*

5.5.4 A recently published Government sponsored research project, undertaken by Howard Humphreys and Partners, estimated that, nationally, about 63% (44 million tonnes) of demolition and construction waste is recycled annually, of which only 4% (2.8 million tonnes) is recycled to secondary aggregate. The remainder is used for low grade uses on construction and landfill sites. However, as is the case in England and Wales generally, accurate data on the availability and the usage of recycled construction/demolition waste in North Yorkshire is not available and a forthcoming Government sponsored research project is expected to examine this issue at a national level.

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- 5.5.5 The County Council has granted planning permission recently for recycling operations at several landfill sites. Two main types of materials are involved. The first is construction and demolition wastes. These often contain a high proportion of concrete which may be crushed and re-used, for example as a capping layer in roads. Graded aggregate can be produced from these materials by using appropriate plant, provided that a sufficient quantity of waste material is available to make the process cost effective.
- 5.5.6 The second type of material, asphalt road planings, are produced during highway resurfacing or rebuilding work and may be re-used for carriageway construction. DoT research indicates that 10% recycled bituminous material can be used in any bituminous layer.

Future Uses of Alternative Materials

- 5.5.7 The County Council will, through the Regional Aggregates Working Party, seek to monitor the level of usage of these and other secondary sources of aggregate and provide information on their availability in order to facilitate achievement of the objectives of the Plan.
- 5.5.8 The County Council recognises that there are obstacles in the way of achieving substantially increased levels of usage of alternative materials. These include the technical problems of producing secondary aggregates which are able to meet high grade end uses, the costs of transporting materials from their point of origin to the place where they are to be used and the wide availability of relatively cheap primary materials. Many of these are issues which need to be addressed at a national level in order to redefine the point at which utilisation of secondary materials becomes an attractive commercial proposition compared with primary materials. Whilst new legislation such as the Environmental Protection Act 1990 will assist by increasing the costs of landfill, the County Council cannot directly control this balance of usage. The Council's main role will therefore be as a facilitator through the decisions it makes on planning applications and as a provider of information. The Council will also continue to maximise the use of secondary and recycled materials in highway schemes for which it is responsible.

5.6 Marine Dredged Aggregates

- 5.6.1 Nationally, in 1989, marine dredged sand and gravel made up 18% (20 million tonnes) of the total consumption of sand and gravel in England and Wales. A large proportion of this material was supplied to markets in the South East of England. Marine dredged materials do not contribute directly to supply of aggregate in North Yorkshire, although landings take place outside the County at Hull and Teesside and serve some of the same markets. While MPG6 envisages that, within Yorkshire and the Humber Region, landings of marine materials will double over the period of the guidance from about 0.25 million

tonnes per annum to 0.5 million tonnes per annum, it is not expected that there will be a requirement to identify sites for landing of materials on the North Yorkshire Coast. Although the County Council recognises that marine dredged aggregates have an important role to play in helping to minimise extraction from primary landwon sources, dredging activity can have a significant effect on marine and coastal environments and sea fisheries. With substantial lengths of Heritage Coast, the Flamborough Head and Bempton Cliffs Special Protection Area, popular holiday resorts and beaches, important fisheries, progress on the definition of Sensitive Marine Areas and increasing awareness of off-shore archaeology, marine dredging for sand and gravel close to the North Yorkshire coastline could have a number of impacts which would need to be carefully assessed.

- 5.6.2 The County Council does not have any jurisdiction below the low water mark and does not, at the present time, have any direct regulatory role to play in the determination of proposals for offshore dredging. The Council is, however, represented on the East Coast Offshore Minerals Forum - a body of elected Member representatives from coastal local authorities in North and East Yorkshire - whose primary function is to act as a focus for consideration of mineral related development off the East Coast. The County Council is committed to working both on its own behalf and through the Offshore Minerals Forum, for increased involvement in the determination of any proposals for aggregates dredging off the North Yorkshire Coast and to campaigning for the highest standards of environmental safeguarding and operational practice.
- 5.6.3 There has been a relatively recent proposal for the dredging of aggregates within Filey Bay. Although the application was subsequently withdrawn, considerable local interest and concern was generated in the range of issues that could arise with marine dredging, in particular the effects on coastal hydrology and sediment dynamics, and the consequent implications for coastal erosion, sea fisheries and tourism. Recent research carried out by the University of Hull Institute of Estuarine and Coastal Studies has highlighted the complexity and sensitivity of the coastal processes operating in Filey Bay. It is becoming apparent that any adverse impacts arising from dredging could affect not only the Bay itself but also adjoining coastal areas. In order to ensure that full recognition is given to the potential adverse consequences, the County Council will seek to influence any decisions on future proposals for dredging and will use any opportunity so afforded to oppose proposals which would adversely affect the on and off-shore coastal environment, sea fisheries and tourism.