



CUMBRIA AND THE LAKE DISTRICT NATIONAL PARK
JOINT ANNUAL LOCAL AGGREGATES ASSESSMENT 2016
(incorporating figures for 2015)

SUPPORTING INFORMATION

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1 Introduction

Purpose of this Local Aggregates Assessment

- 1.1 Minerals planning authorities should plan for a steady and adequate supply of aggregates. It is a requirement of the National Planning Policy Framework (NPPF) to produce an annual Local Aggregates Assessment (LAA), the purpose of which is the annual assessment of the demand for, and supply of, aggregates in a minerals planning authority's area¹.
- 1.2 This is the fourth annual Cumbria LAA, consisting of a 2-page 'headline' document and this, more detailed, supporting information (found at: http://www.cumbria.gov.uk/planning-environment/policy/minerals_waste/MWLP/LAA.asp). It covers the whole of Cumbria and is prepared jointly by Cumbria County Council and the Lake District National Park Authority. As set out in Planning Practice Guidance (PPG), it contains three elements²:
- a forecast of the demand for aggregates;
 - an analysis of all aggregate supply options;
 - an assessment of the balance between demand and supply.

What are aggregates?

- 1.3 Aggregates are the basic raw materials used by the construction industry. Without them, houses, schools, hospitals, factories, offices and roads could not be built or maintained. They can be split into two main groups:-
- Primary aggregates. These are crushed rock and sand and gravel, which are extracted directly from the ground at quarries (**land-won** aggregates) or dredged from the sea (**marine-dredged** aggregates). Depending on their geological source, primary aggregates can have different properties or characteristics that can be important for their end-use.
 - Alternative aggregates. These are alternatives to primary aggregates and are regarded as more sustainable. They can be split into two sub-groups:-
 - **secondary aggregates** are a by-product of mining or quarrying operations or of other industrial processes; they can include colliery spoil, china clay waste, incinerator ash and pulverised fuel ash from power stations, industrial glass waste, ceramic waste, old tyres, slate waste, spent foundry sand and old blast furnace slag banks.
 - **recycled aggregates** are produced by recycling construction, demolition, excavation and other wastes. They can include crushed concrete, bricks and glass, old railway track ballast and the surface layers removed from roads during roadworks (road planings).
(The terms "secondary" and "recycled" aggregates are sometimes used interchangeably)

¹ NPPF paragraph 145, DCLG, March 2012

² PPG, chapter 27 Planning for Aggregate Minerals, paragraph 062 (ID: 27-062-20140306)

- 1.4 It can be easy to underestimate the importance of aggregates to the economy and to our quality of life, because they tend to be high volume relatively low cost materials. Their true value lies in their eventual end-use.
- 1.5 Until the late 1970's, sand and gravel were the predominant source of aggregates. Their proportion of total aggregates has declined since then, with crushed rock now the main source, and the market share of alternative aggregates has increased substantially.

Information used to produce the Cumbria LAA

- 1.6 The LAA should be based on a rolling average of 10 years sales data, but this must be augmented with other relevant local, regional and national information, plus an assessment of all supply options. The most significant information used to prepare this LAA is set out below:-
- the Annual Monitoring Survey forms, sent to all mineral operators in Cumbria for primary land won aggregates and for secondary/recycled aggregates; this survey collects sales data for each type of aggregate for the previous calendar year and also indicates the permitted reserves at year end;
 - data and information on marine dredged aggregates, held by the Crown Estate;
 - local information, which includes, but is not restricted to:
 - data provided in planning applications
 - liaison with minerals operators
 - levels of planned construction and house building in Cumbria
 - the economic strategy of the Local Enterprise Partnership
 - the NW Aggregates Working Party annual report
 - the four-yearly aggregate minerals survey carried out by the British Geological Survey for DCLG – AM2014.
- 1.7 It has also been necessary to take account of the high specification roadstone quarries in the Yorkshire Dales National Park, as any reduced production from within the National Park could have an impact on the high specification roadstone quarries within neighbouring Cumbria.

2 Planning for Aggregate Minerals

The Managed Aggregates Supply System

- 2.1 Since the 1970's, there has been a national Managed Aggregates Supply System (MASS), which can demonstrate a successful track record in maintaining sustainable supplies of these essential construction materials. Originally, the MASS was founded on regular econometric model-based national estimates of need for aggregates projected forward for 15 years, which were then apportioned to regions. When the NPPF was introduced in 2012, it replaced this top-down approach with a bottom-up approach. During 2014, the MASS moved from a stand-alone document into the on-line Planning Practice Guidance³.
- 2.2 The MASS seeks to ensure a steady and adequate supply of aggregates, taking into account the significant geographical imbalances in the occurrence of suitable natural aggregate resources and the areas where they are most needed. It requires mineral planning authorities that have adequate resources of aggregates to make an appropriate contribution to national as well as local supply, while making due allowance for the need to control any environmental damage to an acceptable level. The North West, as a whole, meets only around half of its aggregates consumption from within the region. Cumbria helps to meet the needs of other parts of the region, but much of the shortfall is met from other regions; for example, quarries in Derbyshire and north Wales supply Greater Manchester, due to their proximity.
- 2.3 The MASS is undertaken through national, sub-national and local partners working together to deliver a steady and adequate supply of aggregates:
- at the local level, mineral planning authorities must prepare Local Aggregate Assessments, to assess the demand for and supply of aggregates in their area;
 - at the sub-national level, mineral planning authorities belong to and are supported by Aggregate Working Parties, who produce fit-for-purpose and comprehensive data on aggregates covering specific geographical areas;
 - at the national level, the National Aggregate Co-ordinating Group monitors the overall provision of aggregates in England.

Aggregates Working Party

- 2.4 Cumbria, including the Lake District National Park, is a member of the North West Aggregates Working Party (NW AWP) and constitutes one of the four sub-regions in the North West. Membership comprises each mineral planning authority in the NW, aggregate industry representation and the Marine Management Organisation; other relevant organisations may be invited to attend the AWP, such as the Environment Agency. Active membership of the AWP helps demonstrate compliance with the Duty to Co-operate, but is not sufficient in itself to fulfil the Duty.

³ PPG, chapter 27 Planning for Aggregate Minerals, paragraph 060 (ID 27-060-20140306)

2.5 The role of the AWP is three-fold:

- to consider, scrutinise and provide advice on the Local Aggregate Assessment of each mineral planning authority in its area;
- to provide an assessment on the position of overall demand and supply for the AWP area, including whether, in its view, the area is making a full contribution towards meeting both national and local aggregate needs. This assessment should be based on the constituent LAAs, informed by other economic data, and should also include an indication of emerging trends of demand in the AWP area;
- to obtain, collect and report on data on minerals activity in the AWP area; this includes annual data on sales, permissions and mineral reserves in their area, and data on recycled and secondary sources.

2.6 The mineral planning authority does not have to be bound by the advice of the AWP, but its views could be a material consideration in making decisions on individual planning applications, and should be taken into account in preparing mineral plans. The LAA has been prepared taking account of comments made by the NW AWP secretariat and its wider membership. Map 1 shows the NW AWP Local Authority members.

National Aggregate Co-ordinating Group

2.7 The purpose of this Group is to monitor the overall provision of aggregates in England, and to provide timely advice to Government and individual Aggregate Working Parties. Its specific activities include:

- monitoring annual reports produced by each AWP, with particular scrutiny of the landbank position;
- examining any significant difference between individual AWP reports and the relevant National and Sub-National Guideline figure, in order to understand the reason for such a difference and to decide whether it raises issues of concern about ensuring a steady and adequate provision of aggregates in England;
- providing guidance to Government on future National and Sub-National requirements for aggregates supply; this will include whether, and when, it needs to review National and Sub-National guidelines for aggregate provision in England.

2.8 The Government will continue to publish National and Sub-National Guidelines, because it still sees a role for forecasting the provision of aggregates in England, in order to deliver overarching policy objectives.

Landbanks

2.9 A key additional tool that underpins the working of the MASS is the aggregate landbank, which is principally a monitoring tool and the main basis for the mineral planning authority to consider whether to review their Local Plan.

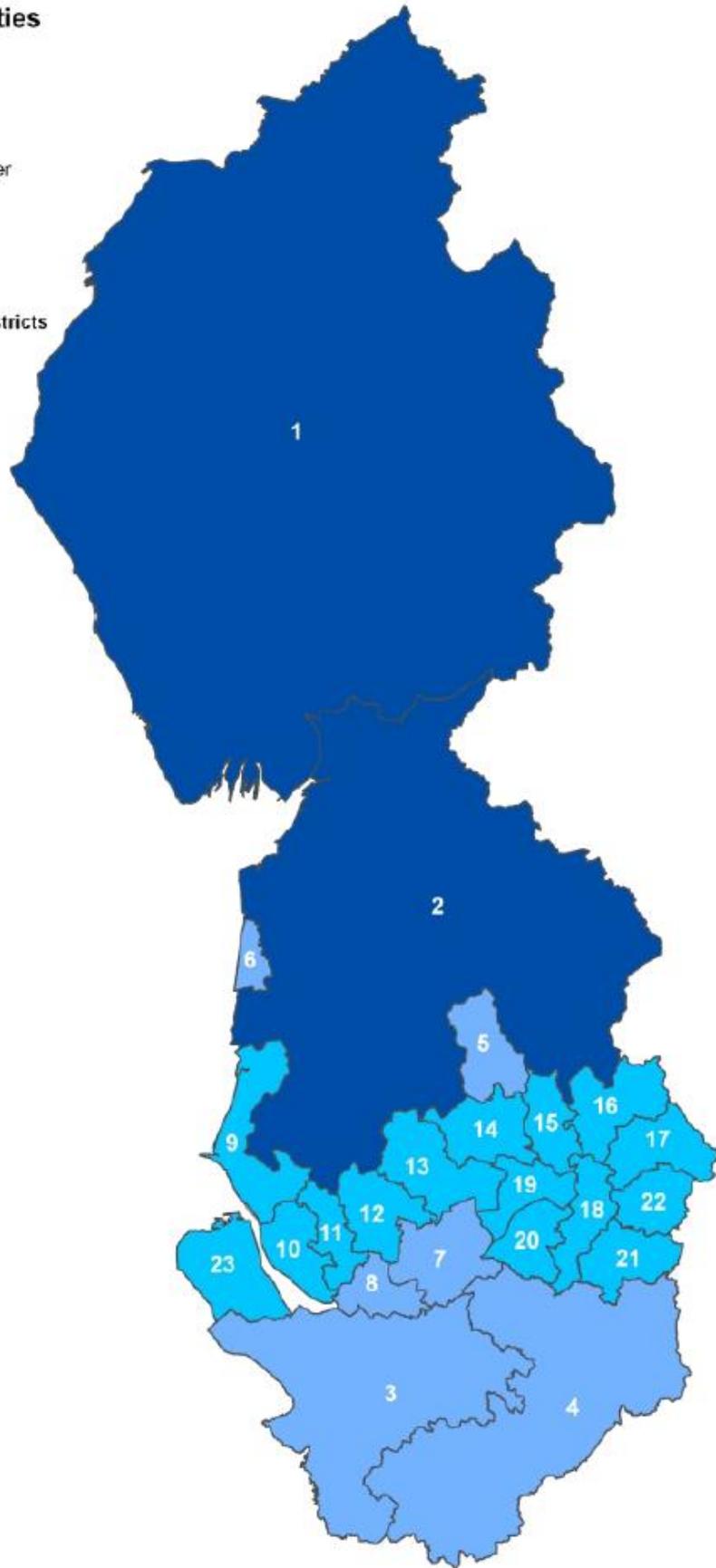
Map 1: North West Aggregate Working Party Authorities

Mineral Planning Authorities

- North West Counties**
 - 1 Cumbria
 - 2 Lancashire

- North West Unitaries**
 - 3 Cheshire West and Chester
 - 4 Cheshire East
 - 5 Blackburn with Darwen
 - 6 Blackpool
 - 7 Warrington
 - 8 Halton

- North West Metropolitan Districts**
 - 9 Sefton
 - 10 Liverpool
 - 11 Knowsley
 - 12 St Helens
 - 13 Wigan
 - 14 Bolton
 - 15 Bury
 - 16 Rochdale
 - 17 Oldham
 - 18 Manchester
 - 19 Salford
 - 20 Trafford
 - 21 Stockport
 - 22 Tameside
 - 23 Wirral



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- 2.10 Separate landbanks are required for two types of non-energy minerals⁴; crushed rock (10 years) and sand and gravel (7 years). The difference in time periods is to some extent because these two types of aggregate serve different markets and have different site infrastructure requirements. For example, quarries producing crushed rock will need a longer security of reserves to justify capital investment in crushing equipment.
- 2.11 Calculation of landbanks should be undertaken annually. The length of a landbank is the sum in tonnes of all permitted reserves for which valid planning permissions are extant, divided by the annual rate of future demand, based on the latest annual Local Aggregate Assessment. Permitted reserves include currently non-working sites, but exclude those sites where mineral working cannot take place until there has been a review of the planning conditions attached to their planning permission.
- 2.12 Where there is a distinct market for a specific type or quality of aggregate (such as high specification aggregate used in road building, or sand used for concrete or asphalt), a separate landbank for that resource may be justified. This is because materials of different physical properties and quality are often needed to meet different end uses, and the scope to substitute one aggregate material for another can be limited. Due to their national significance, a separate landbank has been calculated for high specification aggregates in Cumbria, since separate records became available in 2005.
- 2.13 The NPPF considers that the maintenance of landbanks should, as far as practicable, be from reserves outside National Parks, Areas of Outstanding Natural Beauty, World Heritage Sites, Scheduled Monuments and Conservation Areas.
- 2.14 Although there is a minimum landbank level set by Government, there is no maximum level, and each application for minerals extraction must be considered on its own merits, regardless of the length of the landbank. There are a number of reasons why an application for aggregate minerals development is brought forward in an area where an adequate landbank already exists. These could include:
- significant future increases in demand that can be forecast with reasonable certainty;
 - the location of the consented reserve is inappropriately located relative to the main market areas;
 - the nature, type and qualities of the aggregate, such as its suitability for a particular use within a distinct and separate market;
 - known constraints on the availability of consented reserves that might limit output over the Plan period.

⁴ construction and industrial minerals

3 Forecast of the Demand for Aggregates

- 3.1 The Local Aggregates Assessment is carried out annually, to assess the demand for and supply of aggregates in a mineral planning authority's area. The forecast of demand is just one of the elements of the LAA and is based on both the rolling average of 10-years' sales data for each aggregate type, as well as other, relevant local information.
- 3.2 Local Aggregates Assessments can be prepared by individual mineral planning authorities or jointly with one or more other authorities. Guidance says that an authority should align itself with neighbouring and other authorities whom it considers appropriate, and not feel compelled to work within imposed geographical boundaries or former government office region boundaries.
- 3.3 This is the fourth Cumbria LAA, which has been prepared jointly by Cumbria County Council and the Lake District National Park Authority. Published information about sales and reserves for the quarries in the National Park cannot be separated from those for the county as a whole, so it makes sense to work together on the LAA.
- 3.4 As noted in paragraph 2.13, the NPPF recommends that the maintenance of landbanks for aggregates is from outside a range of landscape and historical designations. Cumbria contains, in whole or in part, two National Parks (Lake District; Yorkshire Dales) and three Areas of Outstanding Natural Beauty (Solway Firth; Arnside and Silverdale; North Pennines) - in total, these landscape designations cover 49% of the county. There is also a World Heritage Site (Frontiers of the Roman Empire: Hadrian's Wall) across the north of the county, around 580 Scheduled Monuments and just under 100 Conservation Areas, all outside of the Lake District National Park.
- 3.5 The landbanks that have been calculated for this LAA, do include reserves located in the Lake District National Park – for crushed rock used as aggregate from Shap Beck and Shap Blue quarries, which are both on the very edge of the Park. There are also landbank reserves located in two of the AONB's – at Sandside (Arnside and Silverdale AONB), Hartley and Helbeck quarries (North Pennines AONB).
- 3.6 The landbanks do not include reserves located in that part of the Yorkshire Dales National Park that falls in Cumbria, primarily because there are no aggregate producing quarries in that area. It has, however, been necessary to take account of the high specification roadstone quarries located in the rest of the Yorkshire Dales National Park, as any reduced production from those quarries, could have an impact on the high specification roadstone quarries within Cumbria.

Context for demand

- 3.7 The National Planning Policy Framework introduces a pro-growth stance, encouraging economic, environmental and social progress via sustainable development. Development cannot be achieved without the necessary raw materials, i.e. minerals, and in particular, aggregates. Demand for development and growth in Cumbria is coming from several sources, all of

which are likely to require aggregates originating in the county; an overview of national, sub-regional and local projects, is set out below.

- 3.8 At the national level, Government published their blueprint for a Northern Powerhouse in August 2015, which is designed to close the north-south economic gap by improving the transport networks across the north of England. The continuing rail electrification project will be rolled out to the Oxenholme-Windermere branch line, with completion expected 2017/18. This, and other transport network improvements, are likely to require primary and/or secondary aggregates from Cumbria.
- 3.9 In April 2014, central Government identified a number of road, rail, transport, flood defence and waste infrastructure projects that had started or would start in the 2014-15 financial year⁵. Of these, five were located in Cumbria – four concerned road pinch points and one was for flood defence. One North West project already underway and due to complete in 2016, was the M6 to Heysham link road, just over the border in Lancashire, for which at least one Cumbrian quarry is contracted to supply coated roadstone. That same month, Government also published a list of new, major renewables projects⁶, of which one was located in the county – Dong Energy offshore wind farm at Walney.
- 3.10 In December 2014, the National Infrastructure Plan (NIP) was published⁷, which presents an overview of more than 2,500 infrastructure projects and schemes that have been initiated since 2010, and showing their delivery progress. It notes that the Dong Energy offshore wind farm at Walney is complete, but also states that its extension will begin in 2018. The NIP was replaced by the National Infrastructure Delivery Plan 2016-2021⁸, reflecting a new approach to long-term infrastructure planning, with the creation of the Infrastructure and Projects Authority and an independent National Infrastructure Commission. The accompanying National Infrastructure Pipeline identifies just over 80 projects in the north west.
- 3.11 In Cumbria, the majority of infrastructure projects listed concern the nuclear industry, including the potential new nuclear power station at Moorside (for which the final financial decision will be taken at the end of 2018) and over 30 replacement or refurbished facilities at the Sellafield complex.
- 3.12 At Budget 2016, the Government announced that flood defence and resilience funding will be increased and additional capital schemes will be delivered – including schemes in Carlisle and wider Cumbria. In addition to this, the Government will fund much of the repair to transport infrastructure damaged by Storms Desmond and Eva.

⁵ Projected infrastructure starts and completions in 2014-15, HM Treasury, April 2014, <https://www.gov.uk/government/news/pm-and-chancellor-welcome-36-billion-infrastructure-projects>

⁶ Major new renewables projects, DECC, April 2014, <https://www.gov.uk/government/news/government-unveils-eight-major-new-renewables-projects-supporting-8500-green-jobs>

⁷ National Infrastructure Plan 2014, HM Treasury, December 2014, <https://www.gov.uk/government/publications/national-infrastructure-plan-2014>

⁸ National Infrastructure Delivery Plan 2016-2021, Infrastructure and Projects Authority, March 2016, <https://www.gov.uk/government/latest?departments%5B%5D=infrastructure-and-projects-authority>

- 3.13 At the sub-regional level, Cumbria's Local Enterprise Partnership (LEP) has published a strategic economic plan⁹. Its priority themes are:
- advanced manufacturing growth;
 - nuclear energy and excellence;
 - vibrant rural and visitor economy;
 - strategic connectivity of the M6 corridor.
- 3.14 In order to achieve these aims, intervention will be focused on four economic drivers, which include infrastructure improvements. They have identified 21 strategic growth sites across the county and intend to prioritise investment in the appropriate infrastructure to provide sustainable and resilient connections for businesses, their markets and workforces.
- 3.15 As a consequence of the proposal to build a new nuclear power station on the west coast of Cumbria, National Grid have initiated a project called North West Coast Connections, which is looking at the route corridors for installing upgraded electricity transmission lines north and south of Moorside. They are considering a range of technology options, including overhead power lines, underground cables and a tunnel under Morecambe Bay. Each of these technologies will need different aggregates, and each could give rise to differing amounts of excavation waste that could be recycled as aggregate. Construction is programmed to begin in 2019, with connection to a commissioned power station in 2024.
- 3.16 As part of their 5-year Management Plan cycle, United Utilities identified a large project to connect West Cumbria to a new drinking water source. Currently, water is taken from Ennerdale, but this lake and the River Ehen host a range of protected species, and unless water extraction is reduced, long-term damage could occur. The plan is to connect West Cumbria with the regional water network via a major new pipeline from Thirlmere; this will also entail the building of a new water treatment works, pumping stations and underground reservoirs. Not only will the project require significant volumes of aggregates, there is also likely to be a significant volume of excavation waste arising, although 70% is likely to be reused, whilst 30% has been earmarked for restoration projects. Careful consideration of the treated water trunk main route is required, as there is the potential to sterilise limestone resources. Construction is due to start in 2017, with completion in 2021.
- 3.17 Studies in the 1980s revealed that the Solway Firth and Morecambe Bay came second and third among UK estuaries ranked for their tidal potential. A variety of projects have been discussed over the years, such as a barrage with road across the Duddon Estuary that was investigated by Britain's Energy Coast in 2010. In 2015, two companies put forward potential projects in Cumbria: one by North West Energy Squared for a 108km tidal barrage with road, from Workington to the north Solway coast (complete by 2022); the other by Tidal Lagoon Power for a tidal lagoon on the coast north of Workington (complete by 2021). Obviously, they cannot both be developed, but if either project comes to fruition, a large amount of aggregates will be needed. North West

⁹ 'The Four Pronged Attack: Cumbria Strategic Economic Plan 2014-2024', Cumbria LEP, March 2014

Energy Squared also plan to develop the Morecambe Bay Tidal Gateway, with road, linking Heysham on the Fylde Coast to Barrow-in-Furness.

- 3.18 At the local level, the Cumbria LEP will also give support to the six District Councils to deliver up to 30,000 new homes through their Local Plans. Carlisle City Council, Eden District Council and South Lakeland District Council have a combined housing requirement to deliver approximately 19,000 new homes by 2025.
- 3.19 In 2016, the Cumbria LEP published a Cumbria Infrastructure Plan¹⁰, which identifies key infrastructure priorities that can maximise the economic growth potential of Cumbria and the UK. The Infrastructure Plan developed a 'long list' of infrastructure projects, which will then be prioritised, shortlisted and promoted to Government via the development of outline business cases. This county-wide Plan must deliver against Cumbria LEP and Government objectives to maximise positive impacts for the county over the next five years. Progress on these projects will be kept under review via the County Council's Economic Development Team.

10-year sales data

- 3.20 Early each year, the annual monitoring survey is sent out to all minerals operators in Cumbria, requesting sales and reserves data for the previous calendar year. There are two survey forms – one for primary, land-won aggregates and one for secondary and recycled aggregates. For the 2015 calendar year, the survey asked for details on sales trends, location of markets and to what use the aggregates are put. It is intended that this data will provide a much better understanding of local, regional and national markets, which in turn will inform the statutory Duty to Co-operate function that the County Council and National Park Authority must undertake. In addition, the 4-yearly survey (AM2014) that was conducted on behalf of the British Geological Survey (BGS), requested more detailed information on the types, uses and destinations of the aggregates; once this report is published in 2016, further market data will be available for analysis.
- 3.21 The data gathered on both of the survey forms is confidential and an officer is nominated to receive the data provided by the operators. Itemised sales and reserves figures are not reported – they are collated so that individual figures and quarries cannot be identified.

Sand and gravel

- 3.22 The minerals survey for the 2015 calendar year shows that in Cumbria, including the Lake District National Park, permitted reserves of all land-won **sand and gravel** at the end of the year were 8.95 million tonnes (Mt); of this amount, 8.77 Mt were allocated by operators for aggregate use, with 0.18 Mt allocated for agricultural or leisure purposes. All sales in 2015 were reported for aggregate use, giving a 10-year annual average sales figure of 0.63 Mt, representing a **landbank of 13.92 years** that would last until late 2028. For a

¹⁰ Infrastructure Plan, Cumbria LEP, May 2016, <http://www.cumbrialep.co.uk/cumbria-infrastructure-plan/>

second year, sales in 2015 have held their significant increase after 5 years of low sales and there is the potential for that increase to continue, so as well as the 10-year sales average, two further scenarios have been considered; one with sales continuing at 2015 sales levels, and one with average sales rising even further to 0.8 Mt a year, which was the average figure for pre-recession sales (2001 – 2008).

- 3.23 The horizontal lines in the graph below show the reserves required to keep a 7-year landbank for sand and gravel, under the three scenarios, projected forward from the 2015 results to the end of the Plan period. The descending lines show how the actual predicted reserves would fall under each scenario, taking into account a number of factors, such as quarry permission expiry. It is clear from the graph that under all three scenarios, reserves are likely to fall below the minimum required to maintain at least a 7-year landbank, somewhere between 2019 and 2022 (the three points where the corresponding lines cross).

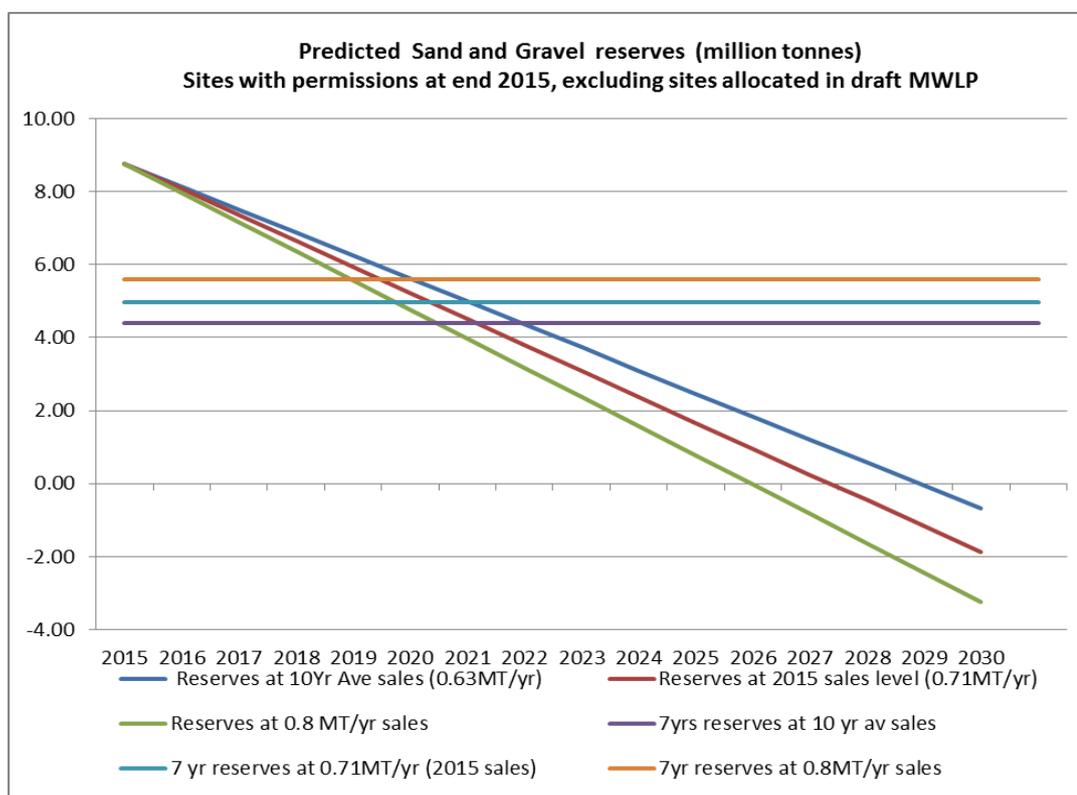


Figure 1: Predicted Sand and Gravel Aggregate Reserves to 2030

- 3.24 Further provision for sand and gravel extraction will be required within the Plan period. None of the sand and gravel reserves are located in the Lake District National Park. The proposals for Areas of Search and Preferred Areas are set out in the Cumbria Local Plan; these, and progress on time extensions for those quarries whose planning permissions expire within the Plan period, are discussed in Chapter 4 of this LAA.

Crushed rock

- 3.25 From the minerals survey for the 2015 calendar year, it can be seen that in Cumbria, including the Lake District National Park, permitted reserves of all

crushed rock¹¹ aggregates at the end of the year were 144.63 Mt and the 10-year average annual sales were 3.21 Mt. This represents a **landbank of 45.06 years**, which would last until early 2060.

- 3.26 Looking at reserves for **limestone alone**, used only for general aggregate use and not as high specification roadstone, on the basis of 10-year average sales figures, limestone has a **landbank of 43.51 years**, which would last until mid-2058. These figures also exclude limestone reserves for non-aggregate use, which are generally the high purity limestone that is used for industrial purposes.
- 3.27 The collated sales figures for limestone also exclude non-aggregate uses; however, if sales of limestone used for non-aggregate purposes fluctuate in response to market changes, this could have an effect on the rate of decrease in aggregate reserves. Reported non-aggregate use limestone sales in 2015 were 18% of the total limestone crushed rock sales (3.08 Mt), whereas reserves allocated by operators for non-aggregate uses were only 5% of all limestone crushed rock reserves. The sales of limestone for industrial purposes has fallen since calendar year 2014, when it constituted 27% of the total limestone crushed rock sales; the percentage of reserves reported by operators to be allocated for non-aggregate purposes has stayed the same.

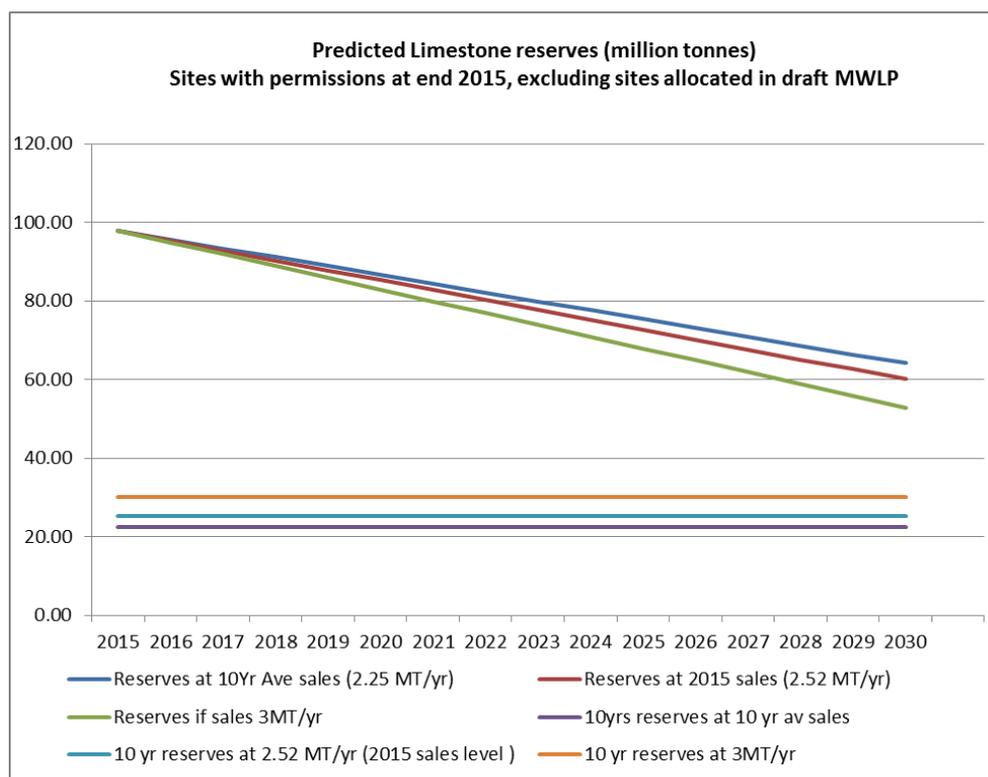


Figure 2: Predicted Limestone Aggregate Reserves to 2030

- 3.28 Figure 2 looks at three scenarios. Firstly, the continuance of the 10-year average sales level (2.25 Mt); secondly, continuance of the 2015 sales level (2.52 Mt); and thirdly, a scenario in which limestone aggregate sales achieve

¹¹ note that the Cumbria and LDNPA LAA include slate as a secondary aggregate, whereas AM2014 included it with crushed rock

3 Mt average sales over the entire period to 2030. This sales level has not been achieved since 2001, when the availability of recycled aggregates was much lower; however, it represents a precautionary approach to forecasting.

- 3.29 Again, the horizontal lines in the graph represent the reserves required to maintain, in this instance, a minimum 10-year landbank for limestone alone, under the three scenarios. The descending lines show how the actual predicted reserves would fall under each scenario, taking into account a number of factors, such as quarry permission expiry. The data table supporting the graph shows that, even in the highest sales scenario of 3 Mt/year, reserves would stand at 52 Mt in 2030, giving an extra provision of landbank by 17 years to 2057. Additional resources of limestone suitable for industrial use are also discussed in Chapter 4, and these would address the apparent imbalance between non-aggregate sales and reserves.
- 3.30 Looking at reserves for **sandstone and igneous** rock alone (without the high and very high specification roadstones), on the basis of 10-year average sales figures, there is a **landbank of 77.66 years**, which would last until late 2092. It was not considered necessary to consider any further scenarios for this particular crushed rock, as its most important application is for nationally and regionally significant roadstones.

High Specification Aggregates

- 3.31 The High and Very High Specification Aggregates (HSA and VHSA), produced in Cumbria are essential for the building and maintenance of low-skid surfaces on roads, especially motorways, and have a national and regional market. Collection of separate data on this material commenced in 2005, in order to ensure ongoing supplies distinct from general crushed rock use for aggregates. It is now possible to derive annual average sales for these roadstones over a ten year period. There are indications that the demand will rise over the next 5 to 10 years, and there are limited alternative sources of the material in the UK.
- 3.32 The reserves of **high and very high specification aggregates** at the end of 2015 were 17.22 Mt, 10-year average sales were 0.59 Mt representing a **landbank of 29.19 years**. The reserves would last until early 2044.
- 3.33 However, given the importance of these resources for the UK and regional economy, a further two scenarios are included in Figure 3; one in which sales average 0.8 Mt per year for the entire period to 2030 (this is just over the highest sales figure of 0.78 Mt recorded in 2009 for these roadstones), and the other continuing sales at the 2015 level (0.42 Mt). Again, the horizontal lines in the graph represent the reserves required to maintain a minimum 10-year landbank for HSA/VHSA alone, under the three scenarios. The descending lines show how the actual predicted reserves would fall under each scenario, taking into account a number of factors, such as quarry permission expiry. It can be seen that just one scenario, for 0.8 Mt sales per year, predicts a shortfall in the required landbank at the end of the Plan period; in this case, reserves would fall below the landbank at the end of 2026 and drop to approximately 5 Mt reserves by 2030 (8 Mt is required to maintain a 10-year landbank at this sales level).

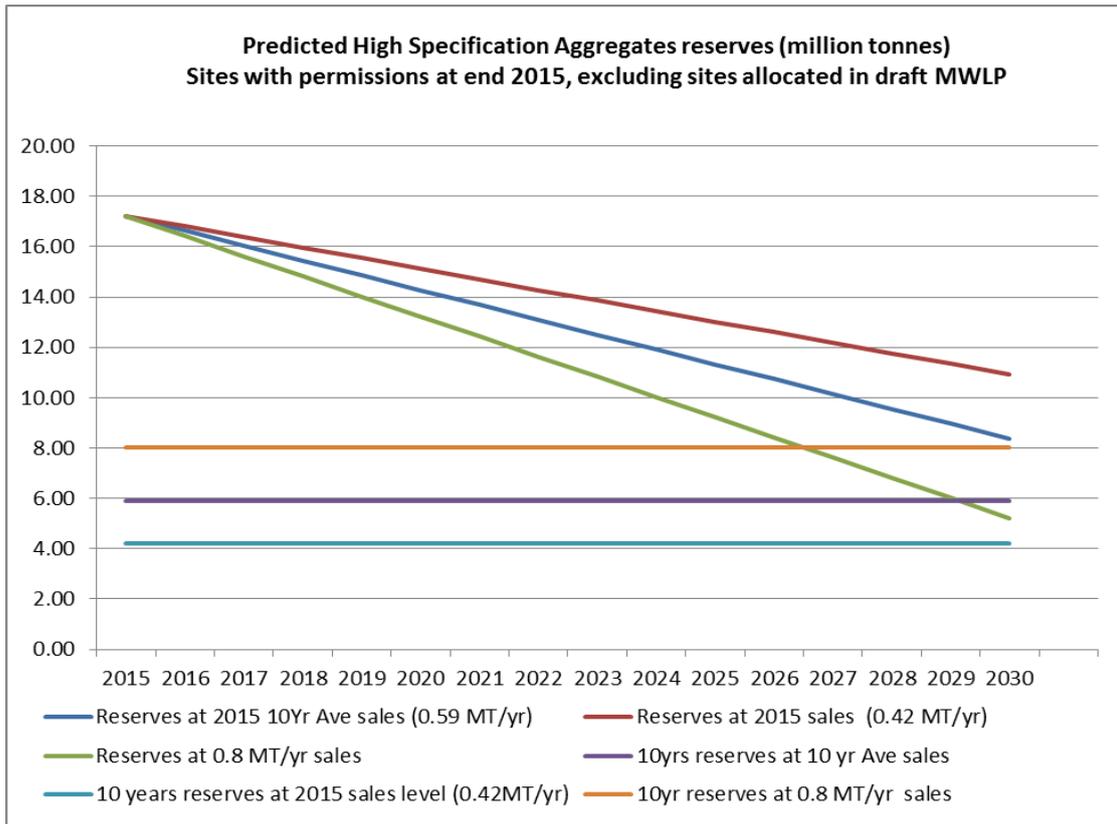


Figure 3: Predicted High/Very High Specification Aggregate Reserves to 2030

- 3.34 None of these reserves are located in the Lake District National Park and further provision proposed in the Cumbria Local Plan is discussed in Chapter 4 of this LAA.

National sales trends

- 3.35 The Mineral Products Association (MPA) state in their latest sales figures¹² that market performance throughout 2015 was generally positive; all construction materials except ready-mixed concrete experienced more modest growth than in 2014. In comparison to 2014, all sales were up in 2015 - sand and gravel by 3.1%, crushed rock by 5.8%, ready-mixed concrete by 4.3% and asphalt by 6.5%; the large rise in asphalt sales was generated by greater spending on roads. Even with these growth trends, markets are not likely to regain pre-recession levels until after 2020; based on 2014 figures, asphalt was down 15%, aggregates down 25% and concrete down 30% on their peak sales levels. This is in line with evidence provided by the Competition Commission, who state that the demand for aggregates, cement and ready mix concrete declined by about a third over the period of the UK recession (2007 to 2009), and, although there was upturn during 2013, demand has still not recovered to its pre-recession levels¹³.

¹² Mineral Products Industry at a Glance, Mineral Products Association, May 2016

¹³ Aggregates, cement and ready mix concrete market investigation: Final Report, Competition Commission, 14 January 2014

Relevant local information

Major projects

- 3.36 The relevant local information that has to be considered in the LAA, includes broader spatial planning issues that could affect the need for mineral extraction; initiatives in West Cumbria and the work of the Local Enterprise Partnership (LEP), fall under this consideration.
- 3.37 The Cumbria LEP has drawn up multi-year Strategic Economic Plans, which identify economic growth investment priorities for Cumbria that will be supported by, amongst a range of funding, Local Growth Fund Resources. The LEP has been investigating the opportunities at 21 sites across Cumbria, and these are set out in their Infrastructure Plan: they include regeneration schemes at Barrow Waterfront (Enterprise Zone) and Whitehaven Town Centre; new facilities and the refurbishment of existing infrastructure, in preparation for the construction of a successor to the Vanguard class submarines at BAE Barrow; improvements to transport links and hubs; revival of the house building market; employment site improvements; and proposals for improved flood defence works. One project already approved is the development of the Port of Workington; construction will include a new road bridge, a new rail crossing point link and refurbishment of the lock gates.
- 3.38 It is considered that the lead-in times for any of these projects will be long enough to anticipate the necessary increase in aggregate production. Continuing dialogue with the County Council's Economic Development Team, the Lake District National Park Authority, the LEP and with other organisations who facilitate development projects, will help to identify expected development peaks. In particular, the County Council and partners have set out a high level proposition to Government – the Cumbria Deal – to provide a positive agenda that will secure a greater proportion of low carbon secure energy supplies, deliver increased GVA, jobs and economic growth in the context of Cumbria being a significant contributor to the Northern Powerhouse and Transport for the North.

Markets

- 3.39 The locations of the markets that are served by the Cumbria quarries were recorded in the 4-yearly National Aggregates Survey¹⁴ (AM2014) conducted on behalf of British Geological Survey (BGS); this is the most up-to-date, consistent source of market location data. Appendix 2 of this LAA contains figures from AM2014, showing the sales destinations of the various categories of aggregates produced in Cumbria, and the discussion below draws on the collated data.
- 3.40 The aggregates survey conducted in 2015 (2014 calendar year data) showed that 77% of sales of sand and gravel from Cumbria's quarries were to destinations within Cumbria and a further 9% to elsewhere in the North West region (see Figure 4, Appendix 2). Just under 12% of sales were to Scotland,

¹⁴ Collation of the results of the 2014 Aggregate Minerals survey for England and Wales, British Geological Survey, March 2016

almost 2% to the North East region, only 0.5% to the Yorkshire-Humber region and 0.2% to elsewhere in the UK or Northern Ireland (NI). In comparison to the last BGS-DCLG survey conducted in 2009, sales within the North West region, including Cumbria, were 78%. A significant increase of sales is reported between 2009 (1%) and 2014 (nearly 12%) to Scotland. Over the same timescale, sales to the North East region have been cut by two-thirds, whilst sales to the Yorkshire-Humber region have dropped significantly from 7% to 0.5%. Sales to the rest of the UK and NI have also dropped.

- 3.41 The 2015 aggregates survey (2014 sales data) indicates that 94% of all crushed limestone sales, including high and very high specification roadstones as they are not separated out in the BGS survey questions, were within the North West region; this is split 65% within Cumbria and 29% to elsewhere in the region. Very little was sold outside the North West: 4% to the Yorkshire-Humber region, 1.5% to the North East and 0.1% to Scotland (see Figure 5, Appendix 2). In the 2009 BGS survey, a comparable 95% was sold within the NW. Sales to Yorkshire-Humber have doubled since 2009 (they were 2%), whilst sales to the North East region have increased slightly, up from 1% to 1.5%. Sales to Scotland have fallen by a quarter, whilst sales to other parts of the UK and NI have fallen slightly.
- 3.42 The 2015 aggregates survey (2014 sales data) indicates that 62% of all crushed igneous and metamorphic rock sales, including high and very high specification roadstones, were within the North West region; this is split 6.5% within Cumbria and 55.5% to elsewhere in the region (see Figure 6, Appendix 2). Sales to the North East region were 23%, to Yorkshire-Humber were 9% and to Scotland 1%. There were also very low sales to both Derbyshire and the West Midlands, who both received just under 0.5% of sales each. In the 2009 BGS survey, a significantly higher amount (82%) was sold within the NW. Sales to Yorkshire-Humber almost doubled since 2009 (5.5%), whilst sales to the North East region have increased almost five-fold, up from 5% to 23%. There were no sales recorded to Derbyshire in 2009, and other regions of the UK and NI received 6.5% of total sales.
- 3.43 The 2015 aggregates survey (2014 sales data) indicates that 82% of all crushed sandstone sales, including high and very high specification roadstones, were within the North West region; this is split 20% within Cumbria and 62% to elsewhere in the region (see Figure 7, Appendix 2). Sales to the North East region were only 3%, to Yorkshire-Humber were 4% and to Scotland 0.5%. There were very low sales to other parts of the UK and NI, but a surprisingly 'high' figure of 6.5% to Derbyshire. In the 2009 BGS survey, a significantly higher amount (98%) was sold within the NW, with just 2% of sales recorded as going to the Yorkshire-Humber region.
- 3.44 Results of both the 2009 and 2014 sales data, confirm that the major market for all aggregates from Cumbria continues to be the North West region (see Table 1). Further detail available in 2014, shows that within the NW, the majority of sand and gravel and limestone sales are within Cumbria; this may be due to the high cost of transport, and the fact that none of the Cumbria quarries transport significant volumes by rail. The internal markets for igneous, metamorphic and sandstone sales of aggregates have fallen since 2009, with higher sales recorded further afield in 2014. This may be

accounted for if it is the high and very high specification roadstones within these aggregate types, which are in greater demand, with fewer alternative options across the UK, for road and motorway building and maintenance.

Table 1: Sales destination comparison between 2009 and 2014

| Aggregate type | Destination | 2009 Sales % | 2014 Sales % | % change |
|----------------------------------|--------------------|---------------------|---------------------|-----------------|
| sand and gravel | NW region | 78 | 86 | +8 |
| | NE region | 4.7 | 1.5 | -3.2 |
| | Scotland | 1 | 11.8 | +10.8 |
| | Yorkshire-Humber | 7 | 0.5 | -6.5 |
| | UK + NI (other) | 9.3 | 0.2 | -9.1 |
| all limestone | NW region | 95 | 94 | -1 |
| | NE region | 1 | 1.5 | +0.5 |
| | Scotland | 0.5 | 0.1 | -0.4 |
| | Yorkshire-Humber | 2 | 4 | +2 |
| | UK + NI (other) | 1.5 | 3.4 | -1.9 |
| all igneous and metamorphic rock | NW region | 82 | 62 | -20 |
| | NE region | 5 | 23 | +18 |
| | Scotland | 1 | 1 | 0 |
| | Yorkshire-Humber | 5.5 | 9 | +3.5 |
| | UK + NI (other) | 6.5 | 5 | -1.5 |
| all sandstone | NW region | 98 | 82 | -16 |
| | NE region | 0 | 3 | +3 |
| | Scotland | 0 | 0.5 | +0.5 |
| | Yorkshire-Humber | 2 | 4 | +2 |
| | UK + NI (other) | 0 | 10.5 | +10.5 |
| all aggregates | NW region | 89 | 88 | -1 |
| | NE region | 2.5 | 4 | +1.5 |
| | Scotland | 0.5 | 3 | +2.5 |
| | Yorkshire-Humber | 4 | 4 | 0 |
| | UK + NI (other) | 4 | 1 | -3 |

(destination sales may not add up to exactly 100% due to rounding up or down)

External influences

- 3.45 The relevant local information may also need to include the implications of policies for areas outside the Local Plan. For example, if the supply of non-energy minerals from within National Parks were to be restricted in future, as implied by NPPF paragraph 144, the greatest impact on Cumbria would be the loss of provision of high specification roadstones from the Yorkshire Dales National Park. Cumbria may be expected to take up some of the shortfall to the national market. YDNPA officers do not see this as a problem in the near future; several of their relevant quarries are intending to develop rail links and the operators would not invest in such expensive infrastructure without the aim of operating in the longer term. Continuing dialogue with YDNPA, especially in respect of their Local Plan progress¹⁵, will keep this particular situation under review.

¹⁵ Yorkshire Dales National Park Local Plan: 2015-2030, publication version, July 2015; Examination undertaken in spring 2016

- 3.46 In 2012, Natural England proposed adding two new expansion areas to both the Lake District and Yorkshire Dales National Parks. A public enquiry on the proposals began in 2013 and the decision to expand both Parks was finally agreed by the Environment Secretary in late 2015. The Yorkshire Dales footprint will increase in Cumbria by 24% and the Lake District's by 3%, leaving only a slim road/motorway/rail corridor between the two. The new boundaries will come into effect from 1 August 2016.
- 3.47 No quarries that are currently situated within the Cumbria County Council authority area will subsequently fall within the newly expanded Lake District National Park. There are a number of building stone quarries within the County Council's area that will fall within the Yorkshire Dales National Park expansion. These are:
- Pickering Quarry - active
 - Rooks Quarry - active
 - Blasterfield Quarry - dormant
 - Hills Quarry - dormant
- Of these four, only Rooks Quarry is known to have ever contributed to aggregate reserves, via its building stone off cuts. The Yorkshire Dales expansion will also bring Shap Fell Quarry to its new border. Both of these issues will require continued co-operation between the County Council and the Yorkshire Dales National Park Authority.
- 3.48 Policies for European Wildlife Sites could also lead to closures or constraints on quarries within or adjacent to them. An example of the latter is Force Garth dolerite quarry in Durham, which provides an exceptionally hard and durable roadstone aggregate. This quarry is viewed as an important component of Durham's aggregate supply network, but the majority of the permission is designated as part of the Moor House-Upper Teesdale Special Area of Conservation (SAC) and North Pennines Moors Special Protection Area (SPA). Determination of the quarry's periodic review was delayed, as a separate assessment under the Conservation of the Habitats and Species Regulations 2010 was also needed. This assessment is now complete and to the satisfaction of Natural England. The ROMP can progress, based on a slightly revised working area that avoids any adverse effect on qualifying interest features and Annex 1 features of the SAC and SPA. Durham County Council consider that the quarry may not be able to continue to operate as it has in the past¹⁶.
- 3.49 It is difficult to see how the loss of, or reduced production from, quarries such as those discussed above, could be completely made up from less environmentally sensitive locations. Reports by the British Geological Survey have highlighted the issues that these matters raise on a national basis¹⁷.

¹⁶ Position taken from conversation with Durham County Council, June 2016

¹⁷ Aggregate resource alternatives: options for future aggregate minerals supply in England, Open Report OR/08/025 (www.bgs.ac.uk/downloads/start.cfm?id=1374); The need for indigenous aggregates production in England, Open Report OR/08/026 (www.bgs.ac.uk/downloads/start.cfm?id=1373); Managing aggregates supply in England: a review of the current system and future options, Open Report OR/08/042 (www.bgs.ac.uk/downloads/start.cfm?id=1372), British Geological Survey and Mineral Industry Research Organisation, 2008

Local Plans

- 3.50 The Local Plans that cover Cumbria provide local information that needs to be considered in the Local Aggregates Assessment, and that Assessment also needs to inform their preparation.
- 3.51 The Lake District National Park Authority's Core Strategy (Local Plan Part One) was adopted in October 2010; the Allocations of Land (Local Plan Part Two) and Minerals Safeguarding Areas (Local Plan Part Three) were adopted in November 2013. These documents have a Plan period to 2025. The LDNPA is undertaking a review of their Core Strategy in 2016.
- 3.52 Cumbria County Council's Minerals and Waste Development Framework (MWDF) Core Strategy and Generic Development Control Policies were adopted in April 2009, with a Plan period of 2008 to 2020. The draft Minerals and Waste Local Plan (MWLP) was published for consultation in May 2016, with a Plan period of 2015 to 2030.

Operational quarries

- 3.53 There are 16 operating crushed rock quarries within Cumbria, including the two for high and very high specification roadstones, providing limestone, igneous and sandstone rock. Two of the crushed rock quarries, Shap Beck and Shap Blue, are partly within the Lake District National Park, whilst Shap Pink is wholly within the Park. In addition to producing aggregates, four of the limestone quarries have the resources to supply industrial markets, mostly for burnt lime.
- 3.54 There are 10 operating sand and gravel quarries in Cumbria; none of these are within the Lake District National Park. There are sand and gravel deposits in the Park, but it is assumed that none are currently deemed commercially viable or they are situated in areas where extraction would not be compatible with the Park's purposes. However, in the LDNPA Local Plan Part Three, the sand and gravel resource is safeguarded by a Mineral Safeguarding Area.
- 3.55 There are 26 operating building stone quarries across the county. Nine of these quarries are located in the Lake District National Park, of which only two produce aggregate, as a by-product of slate working. The remaining building stone quarries are located outside the Park and, of these, eight produce aggregates from slate, sandstone and limestone.
- 3.56 The quarries are listed in Appendix 3, which also includes maps showing their location.

4. Aggregate Supply Options

- 4.1 Having undertaken a forecast of the demand for aggregates in Cumbria, the next step is to identify all aggregate supply options, as indicated by a range of data - landbanks, mineral site allocations in the two Local Plans and capacity data, e.g. marine licences for marine aggregate extraction, recycled aggregates production or the potential throughput of wharves. This analysis is informed by information from planning permissions/applications/pre-application talks, annual mineral surveys, liaison with the aggregate industry and with other bodies, such as the Local Enterprise Partnership.

Primary land-won aggregates

- 4.2 Land-won construction aggregates account for around 65% of all minerals extracted in Great Britain¹⁸. Depending on their geological source, primary aggregates have different properties or characteristics that dictate their end-use; important examples in Cumbria, are the two types of crushed rock that are used for surfacing motorways and main roads, because of their high or very high skid resistance properties (both in terms of the results of their high Polished Stone Value – PSV – and their Sideways force Coefficient Routine Investigation Machine - SCRIM).

Pre-applications, applications and permissions

- 4.3 From the Tables in Appendix 3, it can be seen that five crushed rock quarry permissions will expire before 2030. Of these, **Moota** secured permission for a time extension (to 2024) and physical extension in early 2015, which will result in the working of further reserves; in 2016, **Holme Park** submitted an application for an extension of time to 2043; also in 2016, **Sandside** requested a scoping opinion for an extension of time to 2029; **Shapfell** has submitted an application for a time extension and to deepen the quarry, which will also result in the working of further reserves; **Tendley** is working steadily in accordance with its phasing and a planning application for a concrete plant on site was granted late 2015. **Snowhill no.1 Quarry**, which was previously only considered for building stone, was granted permission in 2014 to increase its aggregate production five-fold for a three year trial period.
- 4.4 The planning application for **Holme Park**, does not propose any deepening or lateral extension of the quarry, as it is located in a very sensitive area. A National Nature Reserve and SSSI lie in the centre of the quarry, and there are several surrounding Limestone Pavement Orders. **Sandside** Quarry is also situated in a constrained site, within the Arnsdale & Silverdale AONB, and it is unlikely that a lateral extension could be accommodated. The situation at both of these quarries will be monitored throughout the Plan period and the LAA updated, as necessary.
- 4.5 There may be issues with two other crushed rock quarries, which have the potential to impact on the landbank. Firstly, **Eskett and Rowrah** Quarry; that part of the quarry known as Eskett is almost worked out and the operator intends to move into that part known as Rowrah, in order to exploit the

¹⁸ Minerals Planning Factsheet: Construction Aggregates, British Geological Survey, June 2013

reserves located there. However, there is a substantial amount of water in the Rowrah area and, if an environmentally acceptable solution for its dewatering is not found, the reserves could be lost. Secondly, **Kendal Fell** Quarry is the subject of a master-planning exercise; the development would potentially sterilise the resource, which remains in a Mineral Safeguarding Area. The quarry has not been worked for around 20 years, but prior extraction of some mineral has been discussed and may be possible. It is arguable that the planning permission is no longer valid, because no submissions have been made in respect of a request for a ROMP. Progress on these two sites will be kept under review.

- 4.6 All but two of the sand and gravel quarry permissions will expire before 2030. **Bonnie Mount** received permission in late 2015 for a physical extension, which would access further reserves until 2035; **Low Plains** was granted permission until 2033 in early 2015, as a result of a successful Appeal. The land at **Brocklewath** was sold to a neighbouring business in November 2013, as they considered it could be a commercial asset, however, no mineral has been extracted since, but the loss of permitted reserve would be very small; **Cardewmires** was sold in 2014, and the new owners have confirmed their intention to apply for a physical extension in the future, so there is an allocation in the draft Cumbria Minerals & Waste Local Plan for an Area of Search; **Faugh No.1** is currently mothballed, but has an active consent; **Faugh No.2** is very small scale, working towards restoration of the site and, unless progress is slower than expected, is unlikely to require a time extension; the current situation at **Overby** is one of steady progress, whilst **High House** requested a screening opinion in early 2016 for a time extension to 2036 and a physical extension - there is an allocation in the Local Plan for an Area of Search between these two quarries for future expansion; progress at **Kirkhouse** has picked up, and it's likely that the reserves will be exhausted before the permission end date of 2023, so there is an allocation for two Areas of Search in the Local Plan; **Low Gelt** has been operating slower than expected, so it is quite likely that an application for a time extension will be submitted in due course; progress at **Peel Place** has been slow, and an application for an extension of time to 2025 was granted in 2015; **Roosecote** was granted a physical and time extension (to 2029) in June 2014.
- 4.7 Of the building stone quarries that also provide some aggregate, there are five, located outside the National Park, whose permission will expire in or before 2030. Of these, there is steady progress at **Flinty Fell** and also at **West Brownrigg**; **Rooks** is worked on a campaign basis and extracts only about a quarter of its permitted reserves each year, so it is likely that an application for an extension of time will be submitted; **Snowhill No.1** has been granted permission to increase its annual production rate and produce aggregate and so is likely to request an extension of time in the near future; **Snowhill No.2** was granted a physical and time extension to 2020 in 2015. In late 2015, **Scratchmill Scar** was granted a time extension to 2031.

Allocations

- 4.8 The Lake District National Park Authority does not identify any minerals site allocations in its Local Plan (2013). Cumbria County Council's draft Minerals

and Waste Local Plan (April 2016), identifies the following Preferred Areas or Areas of Search for aggregates:-

- high and very high specification roadstones
 - M16 Holmescales Quarry
 - M30 Roan Edge Quarry
- limestone
 - M10 Silvertop Quarry
- sand and gravel in the west and south of the county
 - M6 land between Overby and High House quarries
 - M8 Cardewmires Quarry
 - M12 land near Roosecote Quarry (Area of Search)
 - M15 Peel Place Quarry
 - M27 Roosecote Quarry (Preferred Area)
- other sand and gravel
 - M11 Kirkhouse Quarry
- slate
 - M14 Kirkby Slate Quarry

All of these quarries are shown on the maps in Appendix 3. As a rough estimate, all of the aggregate allocations in the April 2016 Local Plan could amount to around an extra 20 million tonnes over the Plan period, if applications were to come forward and be granted.

- 4.9 At Silvertop Quarry (site M10), it is possible that an alternative area for quarrying would have less impact on the setting of the North Pennines Area of Outstanding Natural Beauty, which overlooks the quarry, rather than part of the land within the current planning permission. An Area of Search has, therefore, been identified.
- 4.10 The draft Cumbria Local Plan also proposes Mineral Safeguarding Areas for resources of aggregates that have been identified on the maps produced by British Geological Survey (sand and gravel, limestone, igneous rock, sandstone), plus an MSA for the Wray Castle slate formation. The Lake District National Park identifies Minerals Safeguarding Areas for sand and gravel, limestone, slate and igneous/metamorphic rock in their adopted Local Plan Part Three.
- 4.11 NPPF paragraph 143 states that planning authorities should safeguard existing, planned and potential rail heads and wharfage in their Local Plans. In the April 2016 draft Cumbria Minerals & Waste Local Plan, site allocations policy SAP5 identifies 10 existing and two potential rail heads/sidings for safeguarding.
- 4.12 Of the potential sites, AL32 at Siddick, near Workington, was put forward originally as a rail head for a conveyor link to a coal extraction site. Although the coal extraction site is not an allocation, the rail head could still be used for other, economically viable, mineral or waste operations in the area. Site M31 at Salthouse, near Millom, is also identified. It was recently used as a temporary, night time, loading facility for Ghyll Scaur Quarry, in relation to projects at the Low Level Waste Repository near Drigg; it is retained in case it is needed in relation to projects for Britain's Energy Coast.

- 4.13 The Lake District National Park does not contain any rail heads, but two within the county serve quarries whose extraction area lies within the Park and these need to be safeguarded; these are M35 Shap Beck Quarry and M37 Shap Blue Quarry in the Cumbria MWLP 2016. Shapfell Quarry is in the same area, but lies wholly outside the Park; it also has rail sidings that are safeguarded in policy SAP5, as site M36. Kingmoor sidings near Carlisle are also identified (site M34), as Network Rail Infrastructure import large quantities of old rail ballast here, process it and then export the recycled aggregate around the UK.
- 4.14 There are no wharves in the Lake District National Park, as there is only a very small coastal section on their boundary. Two working ports and their rail sidings have been identified in the Cumbria MWLP: BA26 Barrow Port and AL18 Workington Port. Barrow in particular, handles limestone, sand, aggregates (including marine landings) and granite. Workington is situated on the river Derwent, and the channel is regularly dredged to maintain its access to deeper drafted ships. Silloth Port no longer has rail connection, but is identified for safeguarding as a working port.

Competition

- 4.15 One requirement of the NPPF is that mineral planning authorities should ensure that competition is not stifled by large landbanks of permitted reserves bound up in very few sites; by inference, this means landbanks held by few mineral companies. This has been made increasingly difficult by the succession of mergers and acquisitions within the minerals industry over the years, which have significantly reduced the number of mineral companies operating nationally. However, in Cumbria, the control of reserves is not limited to a very few sites or very few operators. This is not, therefore, a pressing concern, but the situation will be kept under review.

Marine dredged aggregates

- 4.16 Marine dredged aggregates are also considered to be primary aggregates. They account for around 20% of the total supply of sand and gravel in England and Wales¹⁹ and, in 2013, accounted for 10% of all UK aggregates supply²⁰. There are no landbanks required for marine dredged aggregates.
- 4.17 Although seabed sand and gravels are widespread around the UK, many deposits are in deep water, are too thin to be commercially dredged or are dominated by unsuitable grain sizes (e.g. fine sand). Therefore, they are not suitable for construction aggregate use. The industry believes that the permitted reserves of marine sand and gravel are sufficient to last for at least 22 years at the current rates of extraction²¹.
- 4.18 The commercial rights to marine sand and gravel resources in the waters around the UK are held by The Crown Estate, which issues licences for prospecting and production. A licence for marine mineral extraction is also required from the Marine Management Organisation. Historically, the process

¹⁹ The Crown Estate website 2016: <http://www.thecrownestate.co.uk/energy-and-infrastructure/aggregates/>

²⁰ Marine Aggregates: Capability & Portfolio, The Crown Estate, 2014

²¹ Marine Aggregates: Capability & Portfolio, The Crown Estate, 2015

to obtain a production licence could take up to ten years, but this has been simplified and now should not take more than three years. Licensing and capital outlay considerations in relation to the production of marine aggregates could create barriers to entry in the aggregates market.

- 4.19 In Cumbria, marine-dredged aggregates are landed at Barrow, principally taken from the large licensed area in Morecambe Bay, approximately twenty miles off the coast. Since 2004, around 4,000 to 25,000 tonnes/year of sand from this area have been landed at Barrow docks. This is supplemented by the amounts provided by channel maintenance activities at harbours, such as Workington and Maryport; these aggregates are often used very locally, as they are landed by a local operator. See Map 6, Appendix 3 for landing points and Table 7, Appendix 1 for figures.
- 4.20 In 2015, 5,905 tonnes of marine dredged sand was landed at the Port of Barrow; this figure is higher than the 2014 figure (3,790 tonnes), but is only half of the 2013 figure (11,805 tonnes). It had looked as though the general decline in landings at Barrow (from 23,111 tonnes in 2009, down to 9,831 tonnes in 2012) had halted in 2013 and that trends were reversing, but with another dip in 2014 and then a rise in 2015, landings are currently unpredictable. Whether the ups and downs are due to fluctuations in demand or if it is simply a change due to the companies and their internal supply options, isn't clear.
- 4.21 The amounts of marine dredged aggregates that are landed in the north west have generally been falling over several years and have always been less than the authorised extraction rates. In 2015, the total marine aggregates extraction rate from all licensed areas off the coast of the north west was 252,856 tonnes for primary aggregates, a slight rise on the 2014 figure (241,856 tonnes). The 2015 figure is just under one fifth of the permitted extraction rate of 1,312,500 tonnes/year.
- 4.22 One of the key issues relating to reducing supply is poor demand; however, with the pressures on land resources, it is expected that marine aggregates will play an increasingly important role. This can be seen with the renewal for a 15 year period of the Hilbre Swash (off North Wales) licences at the start of 2014, and the future entry of a new company into Cumbria's marine marketplace, with Hanson Aggregates Marine Ltd being awarded a new Option and Exploration Agreement in 2014. If progressed, extraction could commence by 2020.
- 4.23 There would appear, therefore, to be considerable potential to increase the substitution of marine dredged sand for that which is land-won. In recognition of this, Cumbria Minerals and Waste Development Framework Core Strategy Policy 15 states that planning permission will be granted for developments at appropriate locations that would enable increased use of marine dredged aggregates (subject to being environmentally acceptable). A similar policy is included in the April 2016 draft Cumbria Minerals and Waste Local Plan (strategic policy SP9).

Alternative aggregates

- 4.24 The term alternative aggregates is used to describe both secondary and recycled aggregates. Secondary aggregates are by-products of other mining or quarrying operations or of other industrial processes; recycled aggregates are produced by recycling construction, demolition, excavation and other wastes. There are no landbanks required for secondary or recycled aggregates.
- 4.25 Unprocessed feedstock for secondary and recycled aggregates is classified as 'waste'; therefore, the sites that process this waste into aggregates operate under waste management regulations, which are enforced by the Environment Agency (EA). Once processed, secondary and recycled aggregates are no longer classified as waste and are regulated by planning permission.
- 4.26 According to the Competition Commission, when a steady supply of secondary material is available, there are low barriers to entry into secondary aggregates production. Little capital investment is required; crushing, grading and sorting equipment can be leased; and securing planning permission is a much lower hurdle than in the case of primary aggregates. The Commission also say that there are low barriers to entry into recycled aggregates production, although the availability of materials to recycle (primarily from demolition and construction waste) could limit its production.
- 4.27 In Cumbria, important examples of secondary aggregates are slate waste and old blast furnace slag banks; important examples of recycled aggregates include railway track ballast.

Operational facilities

- 4.28 As well as those quarries already identified as producing aggregates from quarry waste, there are around 20 main processing plants in Cumbria producing alternative aggregates from recycled or reused materials (see Table 14, Appendix 3). They are situated in a variety of locations: aggregate quarries, building stone quarries, on industrial estates, railway land or at landfill sites. Few of the slate quarries, which are predominantly situated in the National Park, provide significant quantities of waste material that can be used for aggregates.
- 4.29 It has proved difficult to obtain information, in which there can be confidence, about the amounts of alternative aggregates that are produced. Figures obtained for the last five years have ranged from around 180,000 to 300,000 tonnes/year (see Table 5, Appendix 1), but these are definitely underestimates. No realistic figures can be provided about reserves of alternative aggregates because they will only arise as the waste feedstock material becomes available.
- 4.30 The production and use of alternative aggregates, as a sustainable option to augment primary aggregates, will become an increasingly important element in the growth of Cumbria – whether for more housing or for wider economic development. Data on tonnages produced each year is, at present, sketchy, dependent upon figures held in the Environment Agency's Waste Data

Interrogator and Environmental Permits or gleaned from the monitoring of planning permissions.

- 4.31 Both Cumbria County Council and the Lake District National Park Authority seek to record and monitor alternative aggregate arisings in the county and are considering if, in the future, it may be possible to provide targets. An alternative could be to place a condition on CD&E waste arising from demolition of buildings, roads, etc., but both authorities receive only one or two applications of this type each year. This situation will be kept under review.
- 4.32 The Mineral Products Association (MPA) has estimated that the proportion of aggregates supply accounted for by recycled and secondary aggregates has increased, and that this trend is expected to continue. Figures submitted to the Competition Commission²² quoted an increase from 10% in 2000 to 28% in 2011. In connection with this trend, reference was made to various government initiatives relating to sustainable housing and to the National Planning Policy Framework, which provide strong support for the development of secondary and recycled aggregates operations.

Allocations

- 4.33 The adopted Cumbria Minerals and Waste Development Framework Core Strategy, required sites to be identified to ensure that at least a quarter of aggregate needs can be met by alternative aggregates. That policy has not continued in the draft Cumbria Minerals and Waste Local Plan, as it was considered too inflexible. Firstly, in relation to alternative aggregate production at existing quarries or landfills, although the location is appropriate whilst the quarry is operating, it is much less likely to be appropriate once the quarry or landfill is closed and restored. Secondly, the establishment of businesses that produce alternative aggregates is market-led and they will often use mobile plant, allowing them to move to where the feedstock arises. However, the production of alternative aggregates is still encouraged in the April 2016 draft MWLP, and policy DC9 (Criteria for waste management facilities) proposes that suitable industrial estates are appropriate locations for such facilities, plus aggregate quarries and non-inert landfills if the facility permission is tied to the active life of the site.
- 4.34 Derwent Howe slag bank (reference M24 in the MWLP) is identified as a Mineral Safeguarding Area (MSA) in the draft Cumbria Local Plan, as it is an important resource of secondary aggregates. In previous drafts of the Plan it was suggested that both Millom and Barrow slag banks, which are owned by the County Council, could be similarly safeguarded. At present, neither resource is likely to be accessible: Millom is now a Local Nature Reserve that also falls within the Duddon Estuary Special Protection Area and Ramsar, whilst Barrow is located adjacent to the same SPA and Ramsar, as well as the Morecambe Bay Special Area of Conservation. There are no such slag resources located in the Lake District National Park.

²² Aggregates, cement and ready mix concrete market investigation: Final Report, Competition Commission, 14 January 2014

- 4.35 There is an MSA identified for slate in the draft Cumbria Local Plan. This is a fairly localised MSA, of the Wray Castle formation, which encompasses Kirkby Slate Quarry, a producer of secondary aggregate. The LDNPA Local Plan also has an MSA for slate, which encompasses both Elterwater and Honister quarries, the other slate waste producers.

Pre-applications, applications and permissions

- 4.36 Some of the sites listed in Table 14, Appendix 3, are permanent and run under an Environmental permit issued and monitored by the Environment Agency. The others are run under the conditions set out in their planning permissions, and some are tied to the life of other operations carried out at the site; for example, quarrying or landfill.
- 4.37 Table 14 shows that five out of the eight sites that have an end date in their planning permissions, will expire before the end of the Local Plan periods (2025 and 2030). Of these, it is expected that, in due course, an extension of time to continue producing alternative aggregates will be submitted for **Silvertop**, as the quarry itself has permission for extraction until 2042. It is also expected that extensions of time to continue producing alternative aggregates will be submitted for **Roan Edge** landfill and **Harry Barker Properties Ltd**.
- 4.38 **Derwent Howe** slag bank was granted permission in 2014 to continue slag extraction and recycling of wastes until 2016. This is a short term permission to enable the operator to undertake further investigations of the site that may result in a future lateral extension. There are issues with coastal erosion, restoration and biodiversity at the site, which will need to be resolved, so it is not certain that this site will continue.
- 4.39 The permission for the recycling of construction waste materials at **Roosecote** expires in 2016. This was tied to the end date of the permission to extract sand and gravel from the quarry, granted in 2011. Since that time, the quarry itself has secured an extension of time until 2029, but an application to extend the time period for the aggregates producing facility was not submitted. It seems likely that this facility will cease operations, as the quarry operator has formed a partnership with the recycled aggregates producer at Goldmire.
- 4.40 Out of the 20 sites identified for alternative aggregates, it is likely that at least two, but maybe up to five, will cease to operate within the plan period, whilst the other 15 could continue operations past 2030 – that is, of course, a commercial decision for those operators, whether to continue or not. As well as the sites identified in Table 14, there are a number of operators with mobile plant, who travel to demolition sites to process waste; this suits the dispersed settlement pattern in Cumbria and incidentally cuts down on ‘waste miles’.
- 4.41 A number of potential, major infrastructure projects in the county, discussed in paragraphs 3.11 to 3.16, may have large amounts of inert excavation wastes arising, i.e. Moorside, NW Coast Connections, UU pipeline. If suitable, they could be used for building elements on site, or could be used elsewhere in the county, for example in quarry restoration. All of these projects are currently considering these options and such synergies would be encouraged.

5. Demand and Supply

- 5.1 Mineral Planning Authorities should carry out an assessment of the balance between demand for aggregates and their supply, exploring the economic and environmental opportunities and constraints that might influence that balance. It assesses whether there is a shortage or a surplus of supply and, if the former, how this is/will be addressed.

Supply patterns

- 5.2 The location and size of Cumbria, its dispersed settlement pattern and the layout of road and rail networks, have implications for how it meets its needs for minerals. Not only does the county as a whole tend to be self-sufficient, but there are also recognisable areas within the county, which have traditionally met their own needs from local sources.
- 5.3 As the maps in Appendix 3 show, the locations of Cumbria's quarries are not dispersed uniformly around the county, because of geology. There are very few hard rock quarries in the north of the county and only two operating sand and gravel quarries in the south west.
- 5.4 To some extent, the old, traditional supply patterns of minerals within the county still exist. This pattern mainly arises from the small operators, often with a local niche market, but the rising cost of transport of minerals is also a contributory factor. It is more usual for the national, conglomerate or international companies to operate across a wider area, often sending their minerals to their own processing/production plants around the UK.
- 5.5 Of the three crushed rock quarries that have specialised national and regional markets, Ghyll Scaur is the only operating quarry in England that produces very high skid resistance roadstones; Roan Edge and Holmescales produce high skid resistance ones. Because of geology, other parts of the northwest and other parts of the country rely on supplies of aggregates from Cumbria. The county has traditionally supplied far more crushed rock than it needs for its own use.

How much aggregate does Cumbria need?

- 5.6 The 4-yearly DCLG-BGS aggregates survey data gathered in 2015 (AM2014) showed that a population of 57.65 million²³ people in England and Wales 'consumed' 40.52 million tonnes of land-won sand and gravel and 82.50 million tonnes of crushed rock, which equates to 0.7 tonnes/person of sand and gravel and 1.43 tonnes/person of crushed rock.
- 5.7 The 2014 figures are up by around 10% on the 2009 figures, which were around 30% lower than the previous survey results in 2005. This mainly reflected the recession and cut backs in major infrastructure projects and in house building and other developments, but also reflected the changes in construction methods for road and house building. The results of the survey

²³ based on the average figure for mid-2014 and mid-2015 population issued by the Office for National Statistics

carried out in 2015 appear to show that the downward trend is turning back up.

- 5.8 On the basis of the 2014 BGS figures, Cumbria, with a population of around half a million people²⁴, would need approximately 348,600 tonnes/year of land won sand and gravel and 712,100 tonnes/year of crushed rock. In 2014, Cumbria's quarries sold 680,000 tonnes of sand and gravel and 2.58 million tonnes of crushed rock, which equated to nearly twice as much sand and gravel and around three and a half times as much crushed rock as it needed for its own use.

How to meet the future demand

- 5.9 Paragraphs 3.22 to 3.33 discussed how the reserves of sand and gravel, limestone and high/very high specification roadstones were predicted to fall over the next 15 years under a range of scenarios. Paragraphs 4.3 to 4.14 discussed the supply options, including the likelihood of time extensions to planning permissions, allocations in the Cumbria Minerals & Waste Local Plan (MWLP) and mineral safeguarding, for these primary land won aggregates over that Plan period, to 2030.

Sand and gravel

- 5.10 Sales of sand and gravel aggregates from Cumbrian quarries recovered in 2014, following five years of recession, and sales rose again in 2015. It is not clear yet whether this rise in sales will stabilise at the current level, or if the rise will continue to pre-recession sales levels (0.8 Mt), but with the push for growth in both infrastructure and housing, it is not expected that sales will fall back again in 2016. The table below illustrates how the landbank would perform under the three potential scenarios that were discussed in chapter 3. It also shows the additional reserve required (over and above those currently permitted) to maintain a minimum 7-year landbank at the end of the Plan period in 2030, i.e. to 2037.

| Scenario | Sales level (Mt) | Landbank (years) | Landbank end date | Tonnage required to maintain minimum 7-year landbank (Mt) |
|--|------------------|------------------|-------------------|---|
| 1: 10-year rolling average | 0.63 | 13.92 | 2028 | 5.09 |
| 2: stabilise at 2015 sales | 0.71 | 12.35 | 2027 | 6.85 |
| 3: rise to pre-recession average sales | 0.80 | 10.96 | 2025 | 8.83 |

Table 2: Sand and gravel – outcomes of potential sales scenarios

- 5.11 The site allocations for sand and gravel Areas of Search that were identified in the April 2016 Cumbria MWLP, could be roughly estimated as containing 13 Mt of resources. This is based only on the reserves in the adjoining permitted

²⁴ 497,900 at mid-2014 and 498,000 at mid-2015 (Cumbria Intelligence Observatory: <http://www.cumbriaobservatory.org.uk/Population/populationestimates.asp>)

sites and no estimates have been obtained from the relevant operators. It is by no means certain that planning applications would be submitted, or approved, on the Areas of Search, or that time extensions would be sought and granted on existing sites whose current planning permissions expire within the Plan period; however, if all these applications were submitted and granted, it is likely that there would be sufficient reserves to satisfy pre-recession sales levels and provide a minimum 7-year landbank at the end of the Plan period.

- 5.12 **Provision for sand and gravel will be based on 2015 sales level**, but will, of course, be kept under review.

Limestone

- 5.13 Sales of limestone aggregates from Cumbrian quarries have increased in 2015 (to 2.52 Mt), but have not yet regained the sales levels experienced before the recession began to bite in 2009. It is not clear yet whether this rise in sales will stabilise at the current level, or if the rise will continue to pre-recession sales levels (averaging 2.75 Mt). With the push for growth in both infrastructure and housing, it is not expected that sales will fall back again in 2016. The table below illustrates how the landbank would perform under the three potential scenarios that were discussed in chapter 3. Each scenario shows that no additional reserves are required (over and above those currently permitted) to maintain a minimum 10-year landbank at the end of the Plan period in 2030, i.e. to 2040. Even if the highest recorded pre-recession sales (3 Mt) were achieved throughout the rest of the Plan period, there would still be a landbank of 17 years reserves left in 2030.

| Scenario | Sales level (Mt) | Landbank (years) | Landbank end date | Tonnage required to maintain 10-yr landbank (Mt) |
|--|------------------|------------------|-------------------|--|
| 1: 10-year rolling average | 2.25 | 43.51 | 2058 | 0 |
| 2: stabilise at 2015 sales | 2.52 | 38.85 | 2053 | 0 |
| 3: rise to pre-recession average sales | 2.75 | 35.60 | 2050 | 0 |
| 4. rise to highest pre-recession sales | 3.00 | 32.63 | 2047 | 0 |

Table 3: Limestone – outcomes of potential sales scenarios

- 5.14 A site allocation for a limestone Area of Search was identified in the April 2016 draft Cumbria MWLP; this allocation is not to identify further reserves, but to provide an alternative area for quarrying that would have less impact on the North Pennines AONB. In response to the February 2015 consultation on the MWLP, two further sites were put forward for consideration as limestone Areas of Search to be added to the Plan – Goldmire Quarry and a new quarry at Blencowe. A Supplementary Sites consultation was held in October 2015 on these proposals, but it was not considered necessary to identify them as Areas of Search in the next version of the MWLP. Both proposals would, therefore, be considered through planning applications, if submitted.

- 5.15 **Provision for limestone will be based on the 2015 sales level**, but will, of course, be kept under review.

High and very high specification roadstones (HSA and VHSA)

- 5.16 Sales of HSA and VHSA from Cumbrian quarries rose in 2014, but have not yet regained pre-recession levels. It is not clear yet whether this rise in sales will stabilise at the current level, or if there will be a further rise towards pre-recession sales levels (averaging 0.73 Mt). With the push for growth in both infrastructure and housing, and the need for roads to service them, it is not expected that sales will fall again in 2016. The table below illustrates how the landbank would perform under the three potential scenarios that were discussed in chapter 3. It also shows the additional reserve required (over and above those currently permitted) to maintain a minimum 10-year landbank at the end of the Plan period in 2030, i.e. to 2040.

| Scenario | Sales level (Mt) | Landbank (years) | Landbank end date | Tonnage required to maintain minimum 10-yr landbank (Mt) |
|--|------------------|------------------|-------------------|--|
| 1: 10-year rolling average | 0.59 | 29.19 | 2044 | 0 |
| 2: stabilise at 2015 sales | 0.42 | 41.0 | 2056 | 0 |
| 3: rise to pre-recession average sales | 0.73 | 23.59 | 2038 | 9.73 |
| 4. rise to highest pre-recession sales | 0.80 | 21.52 | 2036 | 10.78 |

Table 4: HSA/VHSA – outcomes of potential sales scenarios

- 5.17 The granting of a new planning permission in early 2015 increased the reserve by 6.78 Mt, and current reserves are now more than sufficient to maintain a 10-year landbank at the end of the Plan period under current sales and 10-year average sales. There are also two site allocations for HSA Areas of Search identified in the April 2016 draft Cumbria MWLP – one at Roan Edge Quarry and one at Holmescales Quarry; it is not guaranteed, of course, that an application would be submitted or granted on these two sites.
- 5.18 In response to the February 2015 consultation on the MWLP, a site was put forward for consideration as a gritstone (a less important stone overlying the HSA) Area of Search to be added to the Plan – Roan Edge landfill, adjacent to the already allocated Roan Edge quarry. A Supplementary Sites consultation was held in October 2015 on this proposal, but it was not considered necessary to identify the gritstone as an Area of Search in the following version of the MWLP.
- 5.19 Government proposals for increased road building, and potential restrictions on quarrying in designated areas (such as National Parks) outside Cumbria, indicate that sales will rise significantly from the 2015 level of 420,000 tonnes.

Therefore, **provision for HSA/VHSA will be based on the 10-year rolling average sales level**, but will, of course, be kept under review.

Economic climate

- 5.20 In chapter 3, paragraphs 3.7 to 3.19 discussed the national, regional and local drivers for growth in Cumbria, detailing a number of infrastructure projects that could require large amounts of aggregate over the next 15 years. As yet, there is no financial commitment to some of those developments but, if they were to happen, it is considered that their implications would be able to be anticipated in advance, through the lead-in time for construction.
- 5.21 Some of the potential major infrastructure providers are already in discussion with quarry operators and the County Council. The position with regard to these projects, and to any consequent need to review policies, will be addressed in the annual Authority Monitoring Reports on the performance of the Plans.
- 5.22 The joint Cumbria LAA will be used as part of Evidence Base for the county's two Local Plans.

APPENDICES

APPENDIX 1

AGGREGATE SALES AND RESERVES

Table 5 – AGGREGATE SALES FROM CUMBRIA (million tonnes)

| Survey year | Limestone | Sandstone and igneous (excluding HSA) | High spec roadstone (HSA) | All crushed rock | Sand and gravel | Marine dredged | Secondary and recycled aggregates* |
|---|-----------|---------------------------------------|---------------------------|------------------|-----------------|----------------|------------------------------------|
| 2001 | 3.0 | 1.1 | | 4.1 | 0.7 | 0.03 | - |
| 2002 | 2.9 | 1.1 | | 4.0 | 0.9 | 0.04 | - |
| 2003 | 2.6 | 1.1 | | 3.7 | 1.0 | 0.04 | - |
| 2004 | 2.8 | 1.1 | | 3.9 | 0.8 | 0.02 | - |
| 2005 | 2.6 | 0.36 | 0.74 | 3.70 | 0.70 | 0.020 | - |
| start of the period for 10-year averages | | | | | | | |
| 2006 | 2.7 | 0.27 | 0.69 | 3.66 | 0.79 | 0.020 | - |
| 2007 | 2.8 | 0.53 | 0.70 | 4.03 | 0.87 | 0.010 | - |
| 2008 | 2.7 | 0.40 | 0.75 | 3.85 | 0.77 | 0.020 | - |
| 2009 | 1.91 | 0.38 | 0.78 | 3.07 | 0.52 | 0.020 | - |
| 2010 | 2.46 | 0.41 | 0.59 | 3.46 | 0.53 | 0.020 | - |
| 2011 | 1.84 | 0.37 | 0.60 | 2.81 | 0.46 | 0.012 | 0.294 |
| 2012 | 2.03 | 0.37 | 0.55 | 2.95 | 0.46 | 0.010 | 0.212 |
| 2013 | 1.62 | 0.37 | 0.41 | 2.40 | 0.48 | 0.012 | 0.202 |
| 2014 | 1.90- | 0.30 | 0.38 | 2.58 | 0.68 | 0.022 | 0.306 |
| 2015 | 2.52 | 0.36 | 0.42 | 3.30 | 0.71 | 0.006 | 0.183 |
| | | | | | | | |
| 3-year average | 2.01 | 0.35 | 0.40 | 2.76 | 0.62 | 0.013 | 0.23 |
| 10-year average | 2.25 | 0.38 | 0.59 | 3.21 | 0.63 | 0.015 | - |

* including slate waste

Table 6 – AGGREGATE RESERVES IN CUMBRIA AT THE END OF 2015
(The required minimum landbanks are: 7 years sand and gravel; 10 years crushed rock)

| | Reserves** (million tonnes) | Landbank (years) at 10-year average sales~ | End date of landbank |
|---|--|---|-----------------------------|
| Limestone | 97.90 | 43.51 | mid 2058 |
| Sandstone and igneous – all | 46.73 | 48.18 | early 2063 |
| • high and very high specification roadstones (HSA) alone | 17.22 | 29.19 | early 2044 |
| • sandstone and igneous without HSA | 29.51 | 77.66 | late 2092 |
| All crushed rock (excluding slate) | 144.63 | 45.06 | early 2060 |
| Land won sand and gravel | 8.77 | 13.92 | late 2028 |

** excluding those classified as non-aggregate use

~ excluding those reported as non-aggregate use

Table 7 – MARINE DREDGED SAND LANDINGS IN THE NORTH WEST 2015

| Area landed | Tonnes landed (actual) | Tonnes permitted |
|--------------------|-------------------------------|-------------------------|
| Barrow | 5,905 | - |
| Liverpool | 209,939 | - |
| Penrhyn | 37,012 | - |
| Totals | 252,856 | 1,312,500 |

source: The Crown Estate, January 2016

Table 8 – HISTORIC COMPARISON OF MARINE DREDGED LANDINGS AT BARROW

| YEAR | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Tonnes | 23,111 | 15,592 | 12,333 | 9,831 | 11,805 | 3,790 | 5,905 |

source: The Crown Estate 2016

SALES DESTINATIONS OF AGGREGATES PRODUCED IN CUMBRIA IN 2014
 (latest data available, from AM2014)

Figure 4 – SAND AND GRAVEL

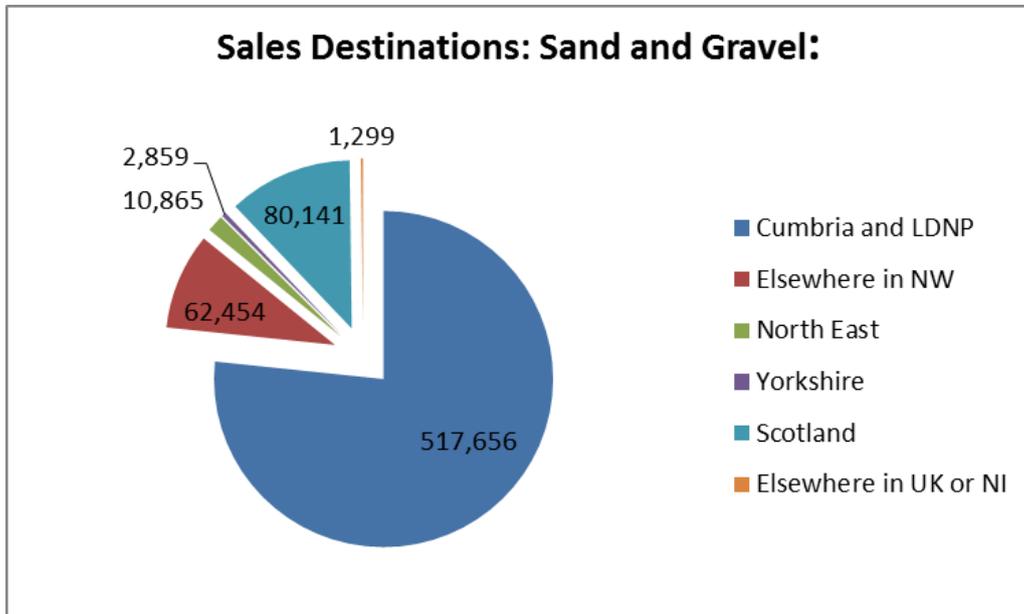


Figure 5 – CRUSHED LIMESTONE

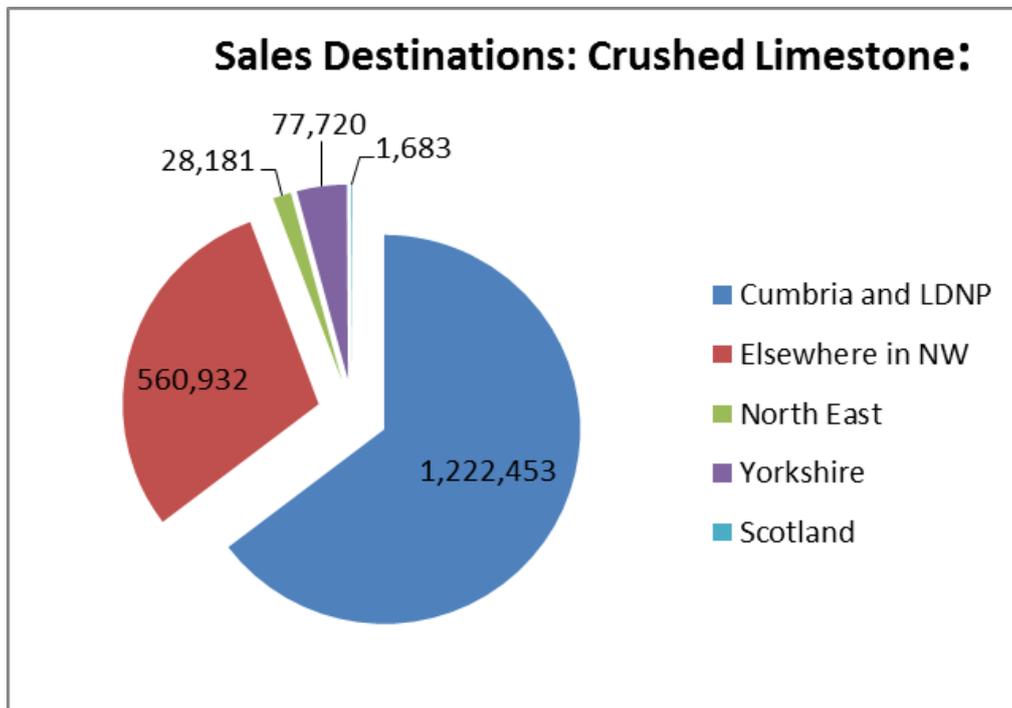


Figure 6 – IGNEOUS AND METAMORPHIC ROCK

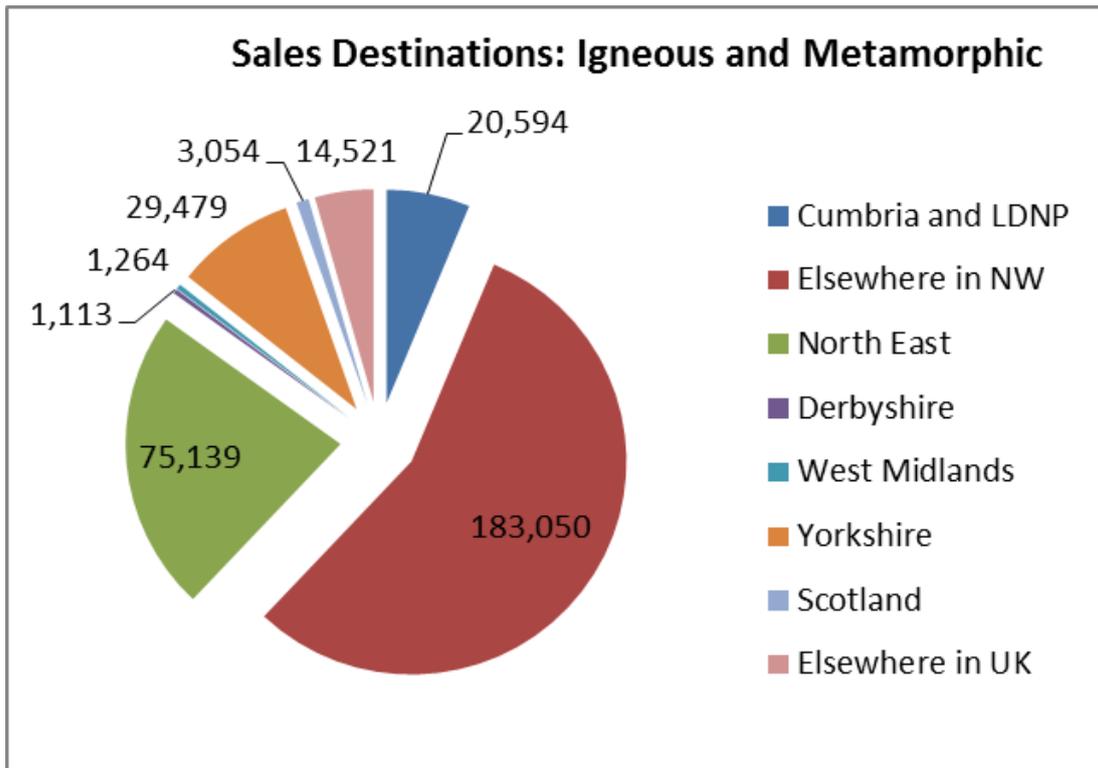


Figure 7 – SANDSTONE (INCLUDES GREYWACKE, GRITSTONE, QUARTZITE)

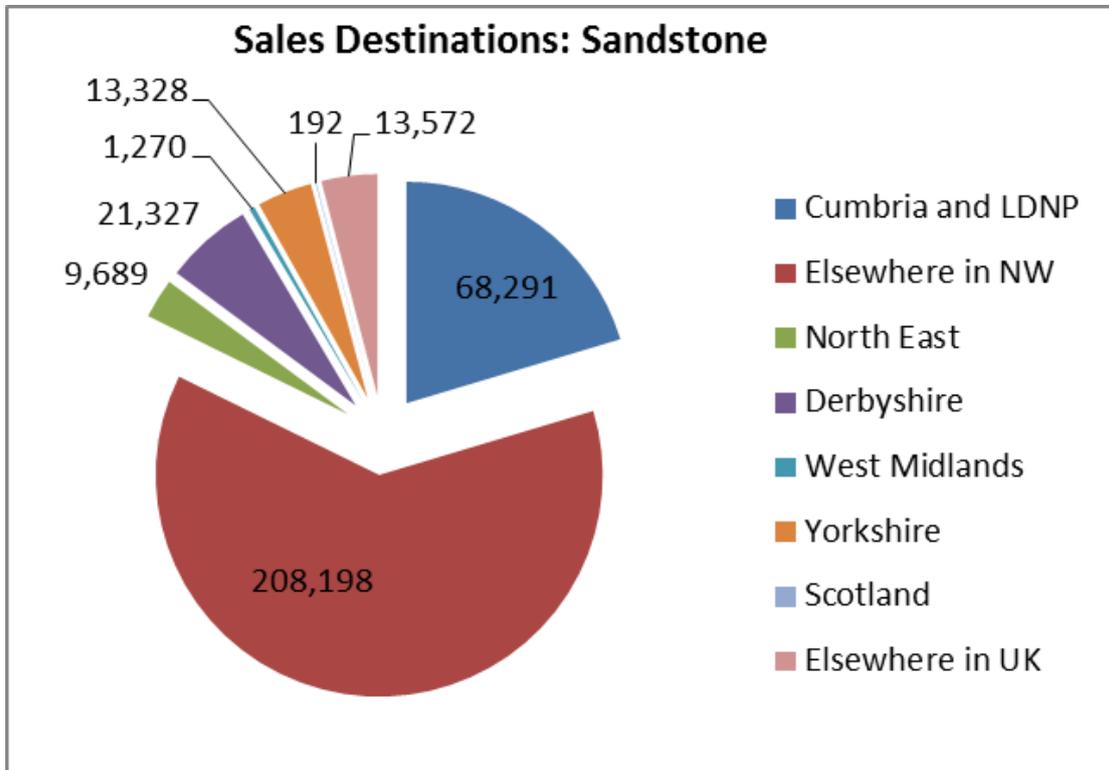


Figure 8 – SLATE WASTE

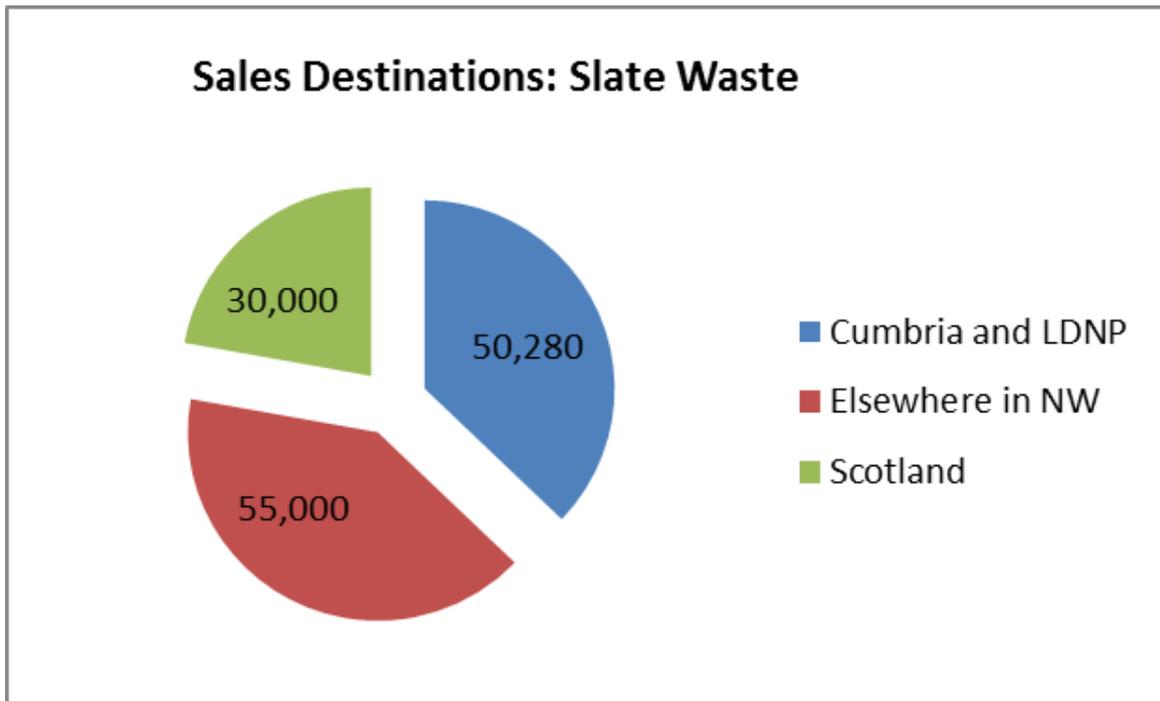
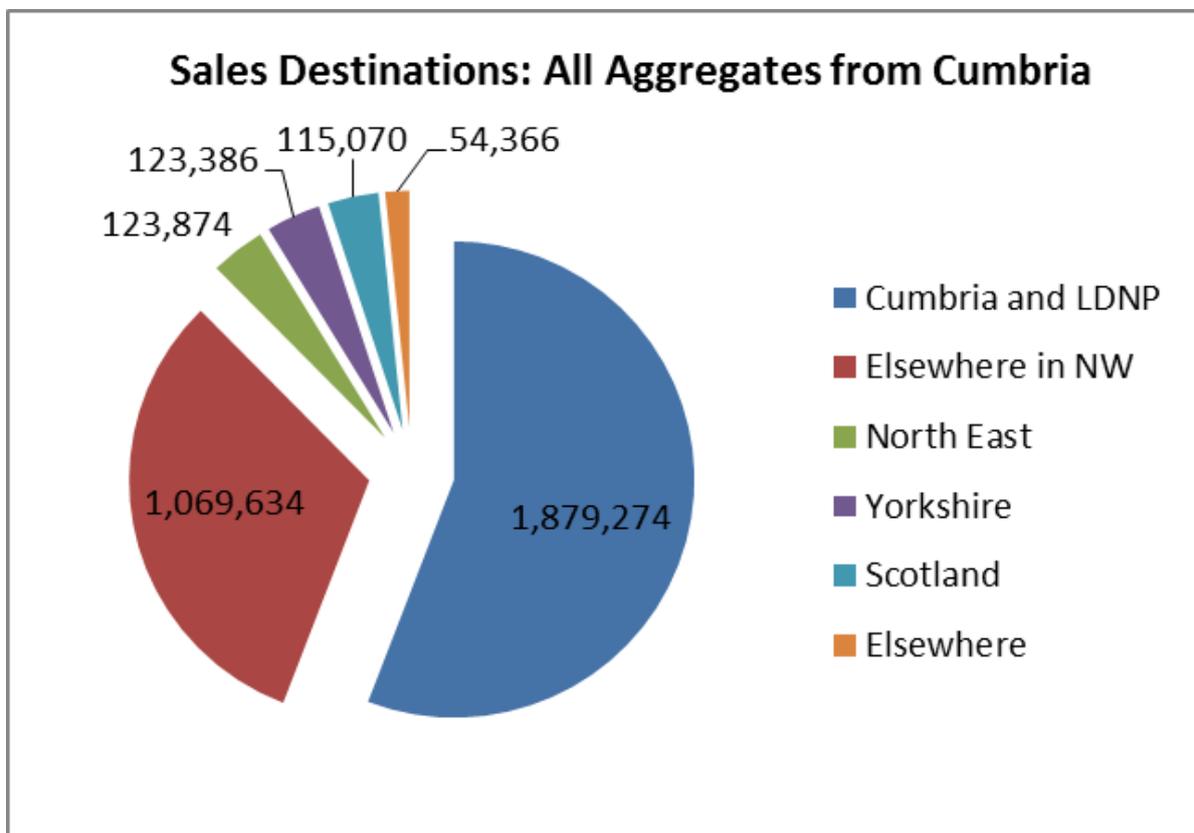


Figure 9– ALL AGGREGATES FROM CUMBRIA



APPENDIX 3

DETAILS of CUMBRIA QUARRIES

Table 9 – CRUSHED ROCK QUARRIES

(see Map 2)

| Location | Expiry date* | Notes |
|----------------------------|----------------------|---|
| Eskett and Rowrah | 2034 30 September | two parts of quarry now combined into one planning permission; options for working 'hard to access' reserves being considered |
| Flusco (Silverfields) | 2032 31 December | also construction waste recycling to 31 Dec 2031 |
| Goldmire | 2042 21 February | also construction waste recycling to 2041 |
| Hartley | 2042 21 February | - ROMP conditions agreed in December 2013 - limited operations at site |
| Helbeck | 2042 21 February | ROMP and lateral extension application submitted February 2016 |
| Holme Park | 2023 31 December | application for time extension to 2043 submitted August 2016 |
| Kendal Fell | 2042 21 February | status under consideration |
| Moota | 2024 31 December | time and physical extension approved May 2015 |
| Sandside | 2020 30 June | scoping opinion for time extension to 2029 requested 2016 |
| Shap Beck # | 2042 21 February | |
| Shap Blue # | 2042 21 February | also deposit of mining waste on land east of the A6 to 31 December 2034 |
| Shap Pink | 2042 21 February | - wholly within the Lake District National Park |
| Shap Fell (aka Hardendale) | 2018 31 December | application for time extension and to deepen quarry submitted |
| Silvertop | 2042 21 February | also construction waste recycling to 16 Dec 2018 |
| Stainton | 2042 21 February | planning permission for operating a deeper part of the quarry (for industrial limestones) granted a time extension to 31 March 2025 |
| Tendley | 2029 31 December | |

* expiry dates as at October 2016

the extraction areas for these two quarries are within the Lake District National Park

Map 2 – Crushed rock quarries



1:550000 at A4 size OS Grid Ref: NY3826 Scale 0 4 8 12 km Drawing Ref: Plan Created on: © Crown Copyright and Database Right September 2014. Ordnance Survey Licence Number 100019596.

Table 10 – SAND AND GRAVEL QUARRIES

(see Map 3)

| Location | Expiry date* | Notes |
|-----------------|----------------------|---|
| Bonnie Mount | 2035 31 December | - planning permission granted late 2015 - also recycling of inert building waste |
| Brocklewath | 2021 31 August | no mineral extraction since change of owner in November 2013 |
| Cardewmires | 2025 1 December | - new owner in 2014 - identified for an Area of Search in MWLP |
| Faugh No.1 | 2024 30 June | - currently mothballed |
| Faugh No.2 | 2022 31 December | |
| High House** | 2021 31 December | scoping opinion for physical and time extension (to 2036) sought in 2016 |
| Kirkhouse | 2023 28 July | identified for two Areas of Search in MWLP |
| Low Gelt | 2019 31 December | potential for time extension to be submitted |
| Low Plains | 2033 30 September | application for time extension to 2033 allowed on Appeal in 2015 |
| Overby No.2** | 2026 31 December | |
| Peel Place | 2025 26 April | - time extension approved in 2015 - future Area of Search identified in MWLP |
| Roosecote | 2029 28 May | - also construction waste recycling to 31 Aug 2016 - quarry extension identified as a Preferred Area in MWLP - adjacent greenfield quarry identified as an Area of Search in MWLP |

* expiry dates as at October 2016

** an Area of Search between High House and Overby Quarries is identified in the MWLP

Map 3 – Sand and gravel quarries



1:550000 at A4 size OS Grid Ref: NY3727 Scale 0 4 8 12 km Drawing Ref: Plan Created on: © Crown Copyright and Database Right September 2014, Ordnance Survey Licence Number 100019596.

Table 11 – HIGH AND VERY HIGH SPECIFICATION ROADSTONE QUARRIES
(see Map 4)

| Location | Geology | Expiry date | Notes |
|-------------|-----------|---------------------|--|
| Ghyll Scour | igneous | 2045 31 December | - Very High Specification Aggregate - time and physical extension approved 2015 |
| Roan Edge | sandstone | 2038 31 December | identified for an Area of Search in MWLP |
| Holmescales | sandstone | 2042 21 February | - mothballed - identified for an Area of Search in MWLP |

Map 4 – High and very high specification roadstone quarries



Table 12 – BUILDING STONE QUARRIES IN LAKE DISTRICT NATIONAL PARK
(see Map 5)

| Location | Geology | Expiry date* | Notes |
|---|----------------|---------------------|--|
| Brathay | slate | 2018 31 March | no aggregate production |
| Petts (aka Pets) | slate | 2020 31 December | - no aggregate production - application for a time extension granted 2015 |
| Broughton Moor | slate | 2042 21 February | no aggregate production |
| Bursting Stone (aka Coniston) | slate | 2030 31 December | no aggregate production |
| Elterwater (aka Lords) | slate | 2042 21 February | aggregate production |
| Low Brandy Crag (aka Brandy Crag) | slate | 2026 30 November | no aggregate production |
| Peatfield (aka Hodge Close) | slate | 2018 31 October | no aggregate production |
| High Fell (aka High Fellside or High Tilberthwaite) | slate | 2024 31 March | no aggregate production |
| Honister | slate | 2042 21 February | by products including aggregates |

* expiry dates as at October 2016

Table 13 - BUILDING STONE QUARRIES OUTSIDE THE NATIONAL PARK
(see Map 5)

| Location | Geology | Expiry date* | Notes |
|------------------|----------------|----------------------|--|
| Bank End | sandstone | 2042 22 February | - inactive, to be restored |
| Baycliff Haggs | limestone | 2042 21 February | - off cuts used as primary aggregate |
| Birkhams | sandstone | 2030 31 July | - time extension approved April 2015 - no aggregate production |
| Blaze Fell | sandstone | 2011 29 September | - awaiting restoration |
| Bowscar | sandstone | 2042 21 February | - no aggregate production - physical extension granted Jan 2016 |
| Crag Nook | sandstone | 2042 21 February | - no aggregate production |
| Flinty Fell | sandstone | 2024 31 December | - waste used as aggregate |
| Grange | sandstone | 2028 29 January | - no aggregate production - time extension granted in 2015 |
| Kirkby Slate | slate | 2042 21 February | - application to amend extraction area and time extension submitted in 2016 - waste used as secondary aggregate |
| Lambhill | sandstone | 2021 30 January | - no aggregate production |
| Larchwood | sandstone | 2007 30 September | - awaiting restoration |
| Leipsic | sandstone | 2022 20 December | - no aggregate production |
| Mousegill | sandstone | 2016 30 June | - no aggregate production |
| Pickering | limestone | 2023 26 February | - no aggregate production - within potential National Park extension |
| Red Rock Canyon | sandstone | 2025 10 December | - no aggregate production |
| Rooks | limestone | 2017 31 October | - off cuts used as primary aggregate - within potential National Park extension |
| Scratchmill Scar | sandstone | 2031 30 January | - time extension granted 2015 - off cuts used as primary aggregate |
| Snowhill no.1 | limestone | 2017 31 May | - no longer primarily building stone - permitted aggregate production increased in 2014 |
| Snowhill no.2 | sandstone | 2020 31 May | - primarily building stone - very limited aggregate production |
| Talkin Fell | sandstone | 2011 3 February | - inactive |
| West Brownrigg | sandstone | 2021 31 July | - off cuts used as primary aggregate |

* expiry dates as at October 2016

Map 5 - Building stone quarries

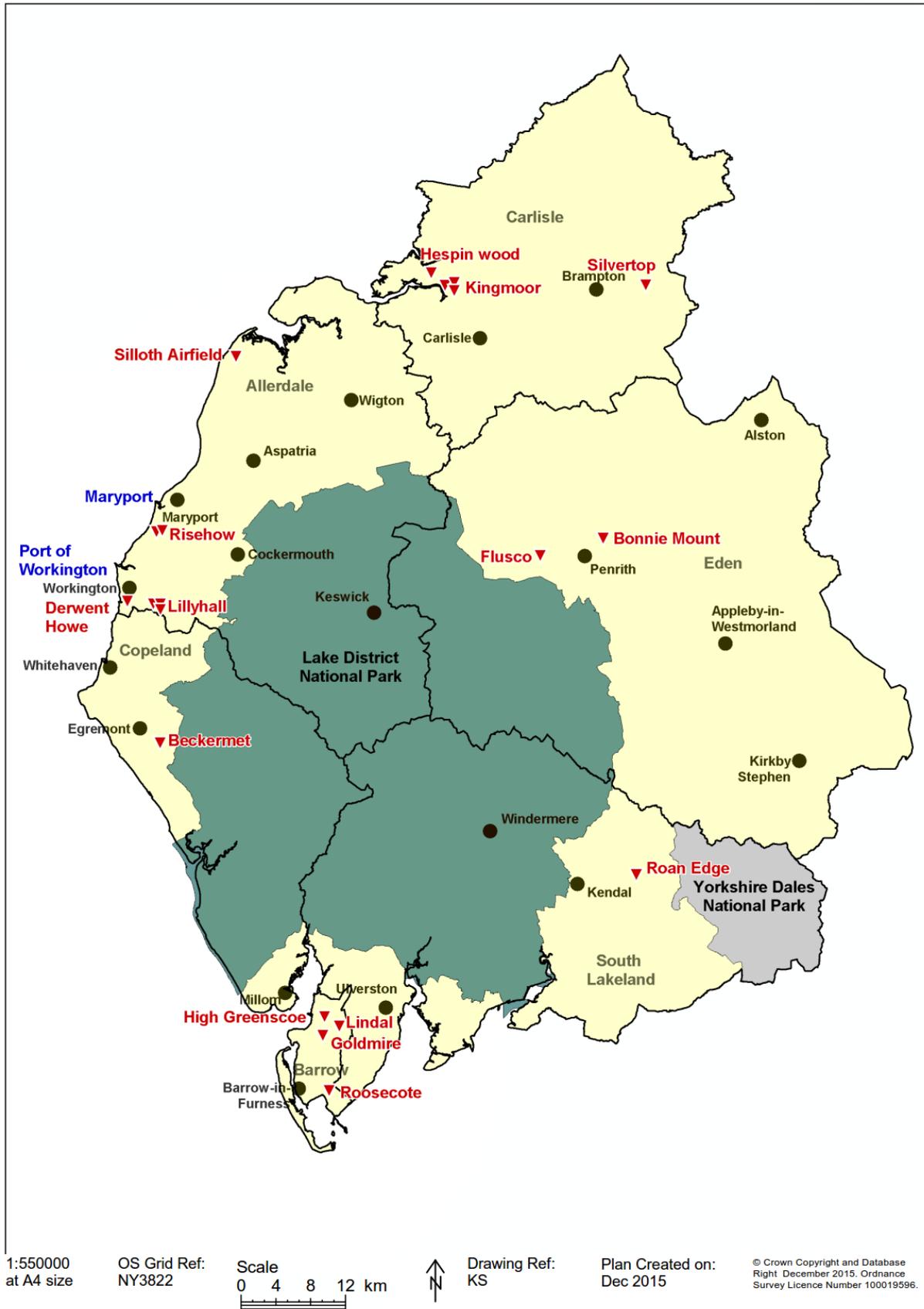


1:550000 at A4 size OS Grid Ref: NY3828 Scale 0 4 8 12 km Drawing Ref: Plan Created on: © Crown Copyright and Database Right September 2014. Ordnance Survey Licence Number 100019596.

Table 14 – ALTERNATIVE AGGREGATES: MAIN PROCESSING FACILITIES
(see Map 6)

| Facility | Material | Notes |
|--|--|--|
| Silvertop Quarry | inert construction waste | permission to 16 Dec 2018 |
| Flusco Quarry | household, commercial, industrial and construction waste | EA permit permission to 31 Dec 2031 (tied to cessation of adjacent landfill) |
| Roosecote Quarry | construction materials | permission to 31 Aug 2016 |
| Goldmire Quarry | construction and demolition waste | EA permit permission to 31 Dec 2041 |
| Bonnie Mount Quarry | inert building waste | permission to 7 Oct 2035 |
| Roan Edge landfill | inert wastes | permission to 1 Nov 2016 |
| Hespin Wood landfill | secondary aggregates | EA permit - permanent |
| Derwent Howe slag bank | slag extraction and recycling of wastes | permission to 31 Oct 2016 |
| McKay Plant & Skip Hire, Lillyhall | construction and demolition waste | EA permit - permanent Lillyhall Industrial Estate |
| Phillip Carruthers Ltd, Lillyhall | concrete, rubble and bricks | EA permit - permanent Lillyhall Industrial Estate |
| Ashcroft Demolition (Cumbria) Ltd, Flimby, Maryport | construction waste | EA permit - permanent Risehow Industrial Estate |
| Thompson's Plant Hire Ltd, Flimby, Maryport | construction waste | EA permit - permanent Risehow Industrial Estate |
| NW Recycling, Kingmoor, Carlisle | construction and demolition waste | EA permit - permanent Rockcliffe Estate |
| Cubby Construction Ltd, Kingmoor, Carlisle | construction waste, road planings | EA permit - permanent Rockcliffe Estate |
| Tony Brown Aggregates Ltd, Diamond Yard, Lindal-in-Furness | stone, brick, etc. | EA permit - permanent |
| Lawson's Recycling Centre, Beckermest | construction waste | EA permit - permanent |
| D A Harrison, Silloth Airfield | inert | EA permit - permanent |
| Harry Barker Properties Ltd, High Greenscoe | construction waste | EA permit permission to 1 Nov 2024 |
| Kingmoor Marshalling yards | concrete rail sleepers and spent ballast | EA permit - permanent |

Map 6 – Alternative aggregates sites and marine dredged landing points



SUMMARY DETAILS OF AGGREGATE END-USE AND SUBSTITUTABILITY

1. This is a summary of information that the major aggregate companies provided to the Competition Commission's investigation into the aggregates, cement and ready mixed concrete market²⁵ (<https://www.gov.uk/cma-cases/aggregates-cement-and-ready-mix-concrete-market-investigation>)
2. General construction, which is construction applications other than the production of ready mixed concrete, concrete blocks and asphalt, and is described as mostly sub-base and structural fill, accounts for around half of the aggregates used in GB. The main aggregates used for this are crushed rock (45 to 50%) and recycled and secondary aggregates (40 to 50%), with sand and gravel only a small proportion (5 to 10%).
3. Ready mixed concrete accounts for around 20% of aggregates used in GB. The main ones used are sand and gravel (60 to 65%) and crushed rock (25 to 30%). Use of recycled and secondary aggregates is low (5 to 15%).
4. The manufacture of concrete products accounts for around 10% of aggregates used in GB. The main aggregates used are sand and gravel (50 to 55%) and crushed rock (30 to 40%). Use of recycled and secondary aggregates is low (5 to 15%).
5. The manufacture of asphalt accounts for about 12% of aggregates used in GB. The main aggregate used is crushed rock (70 to 75%), sand and gravel accounts for 5 to 15%. Recycled and secondary aggregates account for around 10 to 20 %, but it seems likely a large proportion of this is recycled road planings with their high bitumen content.
6. The general conclusions with regard to substitutability suggested that:-
 - there is wide scope for using recycled and secondary aggregates for general construction in low specification applications;
 - there is little use of sand and gravel in general construction, even in regions where sand and gravel are prevalent;
 - for ready mixed concrete and concrete products, the use of sand and gravel or crushed rock appears to be largely influenced by geology and availability. Gravel or crushed rock can be used and the sand can be either that which occurs naturally, or it could be manufactured by washing crushed rock fines;
 - there is more limited scope for using recycled and secondary aggregates for other applications, such as ready mixed concrete and concrete block manufacture;
 - blends of primary and recycled and secondary aggregates can be used in several applications;
 - the use of secondary and recycled aggregates in ready mix concrete is limited by storage facilities for these additional mix ingredients.

²⁵ Aggregates, cement and ready mix concrete market investigation: Final Report, Competition Commission, 14 January 2014