



Local Aggregate Assessment for West Yorkshire 2012

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Cover photo: Processing plant at LafargeTarmac's Methley Quarry Leeds.

EXECUTIVE SUMMARY

This document seeks to assess the aggregate sales, production, imports, exports, consumption/demand and apportionment for aggregates in the former sub-region of West Yorkshire, which includes the unitary authorities of Leeds, Bradford, Kirklees, Calderdale and Wakefield.

The 10 year rolling sales figures demonstrate low figures for sales of Sand and Gravel at 0.13million tonnes pa and mid-range sales for crushed rock at 0.9 million tonnes pa.

West Yorkshire traditionally has been heavily reliant on adjoining authorities and regions to provide high quality sand, gravel and crushed rock to deliver the high consumption rates in West Yorkshire, along with the need for high quality sand, gravel and crushed rock for concreting purposes.

Although a recent planning permission has created a reserve of 1.6million tonnes of sand and gravel in West Yorkshire (with an average estimated output of 0.2mtpa) the consumption rate is such (0.8mtpa) that there will still remain a reliance on imports for the quantity required and to achieve the necessary quality.

The crushed rock landbank based on 10 year rolling sales is high, at over 28years, but again the quality within West Yorkshire is poor and consumption (at 2.3mtpa) high, consequently there remains a reliance on imports to achieve the quantity and quality required.

West Yorkshire will have to continue to rely on imports although it has allocated areas of search in Leeds and sites for extraction in Kirklees and will seek to increase the proportion of sand and gravel it produces, it is unrealistic that West Yorkshire could achieve self-sufficiency.

1.0 INTRODUCTION

1.1 Minerals are important to the local and national economy and play an important part in our everyday lives. A main use is in the construction of buildings and roads and as railway ballast. But the minerals are also used in a wide variety of industrial and commercial purposes, including the manufacture of glass, paint, paper and toothpaste.

1.2 The planning system has to ensure that sites for the production of aggregate are available and sufficient to supply these industries.

1.3 Naturally occurring aggregate minerals in West Yorkshire are limestone, sandstone and sand & gravel. It is the future provision of these minerals with which this assessment is concerned.

Background

1.4 The National Planning Policy Framework (NPPF March 2012) requires Mineral Planning Authorities (MPAs) to plan for a steady and adequate supply of aggregates by determining their own levels of aggregate provision through the preparation of an annual Local Aggregate Assessment (LAA). This should be prepared either individually or jointly by agreement with another or other mineral planning authorities. The LAA should be based on a rolling average of 10 years sales data and other relevant local information and an assessment of all supply options (including marine dredged, secondary and recycled aggregate sources).

1.5 It is also advised that published national and sub national guidelines on future provision should also be taken into account. It should also assess the balance between demand and supply and the economic and environmental opportunities and constraints which might influence the situation. It should conclude whether there is a shortage or surplus of supply and, if the former, how this is being addressed.

1.6 The LAA should seek to ensure that, so far as is practicable, landbanks of non-energy minerals are maintained in locations outside National Parks and Areas of Outstanding Natural Beauty (AONBs). This is in order to conserve nationally designated landscapes and their scenic quality. Therefore, future contributions of aggregate from the Peak District and Yorkshire Dales national parks and Nidderdale AONB into West Yorkshire will need to be considered in light of this.

1.7 More detailed guidance on the preparation of LAAs was published in *Guidance on the Managed Aggregates Supply System* issued by DCLG in October 2012. This reinforces the above policy requirements. It also sets out that MPAs should look at the average 3 year sales in particular, to identify the general trend of demand as part of the consideration of whether it might be appropriate to increase mineral supply. This document has now been superseded by the National Planning Practice Guidance, which refers to the local level (Local Aggregates Assessments), subnational level (Aggregate Working Parties) and national level (National Aggregate Co-ordinating Group) as the way of ensuring managed aggregate supplies. However, the 2012 document is still useful for guidance on approach to matters and no alternate methodology is outlined in the NPPG.

1.8 These new guidelines mark a substantial shift away from the previous 'historic shares' sub-regional approach to apportionment where a nationally prescribed regional apportionment figure was sub-divided proportionally within the region.

1.9 The five West Yorkshire authorities (aka MPAs) have agreed to compile a joint LAA.. Within the Region NYCC, York and the two National parks have collaborated in a joint LAA; East Riding, Hull, North Lincs and NE Lincs are collaborating on a joint LAA, and Rotherham and Doncaster have created their own combined LAA.

1.10 This assessment for West Yorkshire sets out the current and future situation with regard to all aspects of aggregate supply, in particular setting out the amount of land won aggregate that the area will need to provide.

1.11 The LAA will be submitted to the Yorkshire and the Humber Aggregates Working Party (AWP), an advisory body made up of MPAs across the region, the aggregates industry and other relevant expert organisations, for consideration and scrutiny. The AWP has a role to monitor the operation of the LAA system through providing technical advice, particularly on the apportionment of aggregate supply provision.

1.12 The work of MPAs and AWP's across the country will be overseen by a National Aggregate Co-ordinating Group (NACG) the main role of which will be to monitor the overall provision of aggregates in England and provide advice to AWP's and the Government. Specifically, the NACG will provide guidance to the government on national and sub-national requirements for aggregate supply. These proposed national and sub-national guideline figures will be taken into account by MPAs when preparing future Local Aggregate Assessments.

1.13 The latest survey information is from 2012, and it is these figures and the 2009 Regional Aggregates Working Party report on which this assessment is mainly based. This information is updated on an annual basis.

Spatial/Growth Context

1.14 West Yorkshire is located in the north of England in the Yorkshire and Humberside Region. Leeds and Bradford almost coalesce whereas the other cities and Huddersfield are physically separated. However there are many other towns in between all major centres. To the south is South Yorkshire which has many geographic similarities with West Yorkshire. To the west but over the Pennines lies Greater Manchester. To the north and east are the relatively thinly populated districts of Craven, Harrogate and Selby in North Yorkshire and the City of York.

1.15 West Yorkshire has a population of 2,227,400. By 2033 it is estimated that the population of the area will have increased to 2,741,000, an increase of 23% with a corresponding increase in households of 311,548. This population and household growth, will, in turn, create the need for further employment opportunities and improvements in infrastructure.

1.16 It is crucial that the West Yorkshire authorities are able to identify a sufficiency of mineral supply to realise these growth projections and to maintain the infrastructure already developed.

Progressive reduction in quarrying in National Parks and AONBs

1.17 The NPPF says there is a need to progressively reduce quarrying in national parks, which points towards areas outside of the parks taking up the difference. West Yorkshire receives crushed rock from quarries within the Yorkshire Dales National Park (YDNP)— some being railed into Leeds. [There is also a similar railhead in Hull]. The 2009 survey indicates some 1.5 million tonnes was sold into the Yorkshire & Humberside Region but the amount into West Yorkshire is not known. Given the population and economic weight of West Yorkshire the proportion is likely to be at least 25% and as much as 50%.

1.18 Very significant reserves exist in the YDNP capable of continuing to supply markets at existing rates for many years. In the longer term alternative resources may be required . If a new resource is not identified this would have implications for the maintenance of supply. The aggregate from the Park is of a quality which cannot be produced within West Yorkshire

NOTE

A small part of Kirklees lies within the Peak District National Park where the park authority is also the mineral planning authority. However no minerals are currently extracted there.

Mineral use in aggregate

1.19 Although aggregate minerals are used in a way which changes little between one year and the next, evolution of use nevertheless does take place. One has only to mention the way that recycled aggregate had made an appreciable inroad into the sales of low quality virgin aggregate. Product refinement also substitutes recycled aggregate for a fraction of higher quality aggregate in ready mix concrete and in asphalt.

1.20 In concrete making the gravel component can be replaced by crushed rock but this requires a greater proportion of cement to be used in the mix. Sand for asphalt differs from sand for concrete. Currently good concreting sand is not over abundant, so that some effort is being expended by the industry in making a sand from limestone grit or from crushed sandstone. It is also known that marine sand makes an excellent concreting sand and, moreover, can reduce the quantity of cement needed to make concrete of the same performance.

1.21 Many of these alternatives are technically comparable but production and transport costs vary greatly depending on which source is used. Where traditional locally sourced sand and gravel has been freely available it has generally been the preferred aggregate specified by industry and customers. Nevertheless, if traditional locally sources are not available, then these alternates are viable.

National and Sub National Aggregate Apportionments

1.22 The Government produced the 2005-2020 aggregate guidelines in 2009, which is the date of the final report of the former Regional Aggregates Working Party which was dissolved in 2011. The following statistics are from the 2009 survey, there being no full surveys in 2010 and 2011

Apportionment Guidelines – Yorkshire and the Humber 2005-2020

- million tonnes

Land won provision Sand and Gravel	78
Land won crushed rock	212

Assumptions

Marine sand and gravel	5
Alternative materials	133
Net imports	3

1.23 The sub apportionment from the 2009 report based on historic sales figures continued to be respected and indeed was used in the preparation of the Leeds Natural Resources and Waste Local Plan, which was adopted on 16th January 2013.

Sub apportionment carried forward from 2009 - million tonnes

North Yorks

Land won sand and gravel	42.1
Land won crushed rock	140.8

South Yorks

Land won sand and gravel	13.0
Land won crushed rock	53.5

West Yorks

Land won sand and gravel	5.5
Land won crushed rock	17.8

Humber

Land won sand and gravel	12.4
Land won crushed rock	7.9

Totals

Sand and gravel	73.0
Crushed rock	220.0

1.24 The guidelines suggest that MPAs should seek to maintain landbanks of 7 years for sand and gravel and 10 years for crushed rock, based on 10 years average sales.

2.0 MINERAL RESOURCES and relevance to aggregate provision

2.1 The following is an overview of the mineral resources present in the five districts of West Yorkshire, with an emphasis on any aggregates derived from them.

River and river terrace sand and gravel

2.2 This resource is present along the river valleys of the Aire, Calder and Wharfe and some tributaries. The extent and depth of deposits is variable. Only in the Wharfe is the sand and gravel suitable for making high quality concrete. The resource has been extensively worked since the 1930s and the areas are also now restrained by development and in Leeds, by the

Natural Resources and Waste Development Plan Document (Local Plan) adopted in Jan 2013, which indicates through policy Minerals 6 that extraction is unlikely to be supported to the east of Pool in the Wharfe Valley. On consideration of the BGS maps, urban constraints and known formerly worked areas, it is considered that there are likely to be no remaining areas which could be economically worked in Calderdale or Bradford. The site at Methley, Leeds was worked out in August 2013. There are permissions or allocations not implemented in Kirklees, Wakefield and Leeds.

2.3 There are currently fewer productive sites than at any time since 1986. Annual output is at a recorded low.

Glacial sand and gravel

2.4 Small localised deposits in many areas. One deposit at Oulton, Leeds, was worked dry as a borrow pit in the 1960s. There was also a small sand quarry near Boston Spa until the last decade. It is not expected that any resource could be viably extracted.

Brick and Fireclay

2.5 Both minerals have been extensively worked at numerous locations in the coal measures. Several brickworks remain in Wakefield and in Leeds. Particular clay horizons are worked for the production of clay pipes at several sites in Kirklees near Skelmanthorpe. Brick clay and landfill engineering clay continue to be extracted at two sites on Soil Hill to the south of Denholme, Bradford. As fireclay occurs beneath coal, it can also be supplied from opencast coal sites. Also available in Calderdale.

2.6 Several brickworks have closed since 1986 and a further works at Swillington is currently mothballed despite a valid permission to erect a new works and quadruple output. Brick clay and fireclay sites do not normally contribute aggregate, though wastage can be used to build quarry roads, displacing other aggregates. Brickclay at Howley Park overlies the Thornhill Rock which is worked at the same location.

Sandstone aggregate

2.7 There is wide distribution of quarries producing crushed sandstone; mainly in the millstone grit series of Kirklees, Bradford and Calderdale but also in the coal measure sandstone series, notably the Thornhill Rock in Leeds. Some of the quarries are quite large such as Crosland Moor, Shepley, Bolton Woods and Howley Park. There are no sandstone aggregate sources in Wakefield.

2.8 The sandstones are too weak and porous for the manufacture of concrete or for road building but can be used in undemanding situations and for bulk fill. However an important role is achieved by further crushing to produce a building sand. This is also used in large quantities in the manufacture of concrete walling and paving blocks at a factory in Calderdale.

2.9 No sandstone quarry exists solely to produce aggregate; it is produced alongside the extraction of stone for the manufacture of natural stone for walling, cladding and paving. At

many sites the aggregate is essentially an occasional by-product and is produced in relatively small quantities for low grade uses.

Building stone

2.10 The distribution of quarries for building stone production is the same as for sandstone aggregate – in most cases they are the same. Many of the quarries are very small with a low output tonnage. Often the quarries occupy exposed locations such as Hillhouse , Elland Edge and Harden Moor. The stone is often sawn at a quarry to specific tolerances for walling, cladding and paving. Much is of a high quality and travels widely to customers across England and into Scotland. Sandstone blocks are also traded between quarries to widen the portfolio of stone types which can be offered. Some producers of cut stone do not actually manage a quarry at all.

2.11 At many sites the wastage from extraction for blocks and from sawing is crushed for aggregate/bulk fill though usually on an irregular basis. The tonnage can exceed the weight of the higher value cut stone. Several quarries have closed since 1986. Many quarries have been enlarged and/or activity intensified.

Limestone aggregate

2.12 Dolomitic limestone is present only along the eastern margins of Leeds and Wakefield. Although very different as a material it shares much in common with sandstone in that indifferent quality inhibits the widest possible use of the rock as an aggregate, although rare deposits of UML could be used for higher quality uses. The density of the strata varies so that, with care and by washing, it is possible to improve quality such as at Darrington, on the margin of Wakefield. A recent very large permission has been implemented near Knottingley. Two quarries have closed since 1986.

Building limestone

2.13 The more uniform limestone strata has been extensively quarried on a small scale for local building stone. Currently there is one productive quarry, at Bramham in Leeds. This is a moderately sized unit supplying sawn stone across the region for construction use including elaborate carving. Interest in a further site has resulted in a Preferred Area for a new quarry in Leeds. As with sandstone this quarry is likely to produce a greater tonnage of aggregate. No quarries have opened or closed since 1986.

Coal

2.14 Deep mine : Although employing tens of thousands of miners in the past in West Yorkshire the only jobs remaining are for those that travel to Kellingley Colliery in Selby District east of Knottingley. The small mine at Hay Royds Clayton West has now shut. A proposal for a new small mine at Crofton is currently at application stage. Coal mining is not a source of aggregate. Spoil can be used as bulk fill in some load bearing situations.

2.15 Opencast : Since 1942 there has been widespread opencast coal working in all districts except Bradford and sparsely in Calderdale. The surface coalfield includes a small area of moorland west of Todmorden where there is sporadic interest. Since the mid 1990s

opencast coal working has been in steep decline across the coalfield. Currently the only active coal working site is in Wakefield. Opencast coal working is not a source of aggregate, though occasional hard strata can be used to strengthen site roads in substitution for bought in aggregate.

Other hydrocarbons

2.16 West Yorkshire lies toward the north western end of the Gainsborough Trough, within which oil and gas source strata were deposited. In the East Midlands significant quantities have been found. Oil wells drilled at South Kirkby (1967) and Wessenden (1987) were however dry. The Bowland Shale – much discussed as a source of gas by fracking, underlies much of West Yorkshire at depth. In theory the extent of abandoned mines suggests good potential for mine gas extraction but in practise there has been little interest. Only one production unit, at Newmarket Lane in Wakefield. Gas and oil extraction is not a source of aggregates; rather it is a consumer. No interest in fracking has yet been shown.

Secondary aggregates

2.17 Ferrybridge Power Station in Wakefield is a source of pfa and furnace bottom ash. Huddersfield municipal and Yorkshire Water sewage waste incinerators are sources of furnace bottom ash. Construction of additional incinerators at Ferrybridge, Leeds and possibly elsewhere in West Yorkshire will increase the tonnage of furnace bottom ash, which can be crushed to make an aggregate. Currently this is expected to be transported outside of the area for processing but this may change.

Recycled aggregates

2.18 A great deal of crushing of demolition debris takes place in situ and is largely unrecorded. The remaining demolition material which is crushed and screened does so at a contractor's central depot. There are about 20 such depots across West Yorkshire. In almost all cases the product of crushing is a fairly unsophisticated material really only useful for repairing tracks, trench fill, drainage medium and the like. With care this aggregate can be used as a lower foundation fill in load bearing circumstances; for example it was used beneath compacted higher quality virgin aggregate on the East Leeds Link Road.

2.19 Given that land won aggregate in West Yorkshire is, in the main, of only modest quality, there is an element of competition and substitution between quarried aggregate and recycled aggregate in the middle and lower quality parts of the market. Crushed brick, stone, concrete and tarmac is produced in large tonnages in all districts.

3.0 ASSESSMENT OF LOCAL RESOURCES, RESERVES AND PRODUCTION

Sand & Gravel Resources and Reserves

3.1 Resources are the mineral in the ground which does not have planning permission for extraction. The stock of reserves with planning permission and not yet extracted is known as the landbank.

3.2 The landbank includes active quarries and also inactive quarries which have valid conditions for working. Government policy requires landbanks to be maintained for all aggregate minerals, with the recommended landbank period for sand and gravel required to be at least 7 years = 7 x the annual apportionment.

3.3 The sand and gravel resources with the potential for economic value can be found in the Calder valley (Kirklees and Wakefield) at the confluence of the Aire and Calder (Wakefield and Leeds) and in the Wharfe valley (Leeds) There is also a small resource area with limited potential in the upper Aire valley (within Leeds) and adjacent to the river Aire in the area east of Esholt (Bradford).

3.4 There is an allocation at Midgley Farm Otley on the Wharfe , areas of search around Methley and Altofts and allocations in Kirklees in the Dewsbury, Mirfield and Bradley area. The single site at Methley in Leeds exhausted its permitted reserve in July 2013. Unimplemented permissions occur at Dewsbury (recent decision) and at Horbury*, Normanton* and Castleford* (*very old "ROMP" permissions). Attempts to implement the Horbury permission (the Strands site) have not yet succeeded.

3.5 In 2012 it was considered that these resources and reserves held sufficient potential to ascribe a potential tonnage of 9.5 million tonnes which could reasonably be worked in the period to 2026, in excess of the average annual sales tonnage and in excess of 366,000 tonnes per annum (see summary below). This forecast was accepted by the Inspector examining the Leeds Natural Resources & Waste DPD.

3.6 It should be noted that in recent years no gravel from the Wharfe has been produced and it is only this source within West Yorkshire which makes good concreting aggregate.

Sites with planning permission:

Forge Lane Dewsbury	950,000 tonnes
The Strands, Horbury	650,000
Foxholes and Penbank Wakefield	Not known and not likely to be viable
Total circa	1.60 million tonnes

Preferred areas, areas of search and allocations in adopted local plans

Midgley Farm, Otley	allocation; possibly 1.6 million tonnes
Mickletown Leeds	extensive area of search
Dewsbury, Mirfield and Bradley	allocations (approx. 1.5 mill t)
Dewsbury	small area of search proposed in draft Core Strategy
Total potential circa	7.5 million tonnes

3.7 However, although there appears to be resources within West Yorkshire, the industry still continues to consider that the outcome of the BGS document “West Yorkshire sand and gravel resources: Investigating the potential for an increased sub-regional apportionment” BGS, 2009 is valid. Industry representatives consider that, in terms of geological constraints, West Yorkshire has the resources to accommodate an increased apportionment however, the relatively high population density in West Yorkshire means that planning constraints are likely to be much greater. The principal factor in decreasing the amount of available resources is access to adequately sized sand and gravel deposits. Due to this issue industry representatives view the ability of West Yorkshire to meet an increased sub-regional apportionment as limited. They considered a continuation of the current situation, with the majority of the apportionment being met from North Yorkshire, as a more realistic option.

Local Plans : Geographic policies restricting supply

3.8 Relevant to options for the supply of aggregates from within West Yorkshire is the existence of any policy in an up to date adopted plan which restricts mineral production. MINERALS 6 in the Leeds Natural Resources and Waste Local Plan adopted on 16th January 2013 says it is unlikely the council will support proposals for the extraction of sand and gravel in the Wharfe Valley in the area east of Pool. [the allocation is west of Pool].

Interim Summary :

3.9 Sales of sand and gravel originating from West Yorkshire have steadily declined for over 20 years consistent with the number of operating sites and their size. Sites which have closed have not been replaced by sufficient new permissions sought and obtained by the minerals extractive industry. Gravel for concreting purposes is no longer produced.

3.10 The 2009 sub apportionment which applied was 5.5 million tonnes over 15 years, or just 0.366 million tonnes per annum. Even so it is many years since the output from West Yorkshire was greater than this quantity. The tonnage with planning permission in 2013 is around 1.6 million tonnes, making the landbank 4.4 years on the traditional sub apportionment.

Crushed Rock Resources and Reserves

3.11 Crushed rock aggregate is produced in all five West Yorkshire districts, sometimes in significant quantities. Dolomitic limestone aggregate is only produced in Wakefield. Many of the smaller sites are essentially in the business of producing natural stone paving, walling and cladding with only incidental and small amounts of aggregate as a by product.

3.12 Crushed rock sandstone as a by- product takes place where the geology is primarily suited to building stone production, namely horizons in the millstone grit series such as the Huddersfield White Rock, the Rough Rock and Guiseley Grit. Production also takes place in the Elland Flags (lower coal measures) and the Thornhill Rock (middle coal measures). Howley Park, Shepley and Moselden quarries are major suppliers to the concrete works at Southowram.

3.13 Limestone aggregate is currently produced from only two locations adjacent to Knottingley. Mineral is trucked beneath the M62 to a processing plant at Darrington Quarry. This aggregate is washed to remove fines, thereby achieving a higher specification for its afteruse.

3.14 It should be noted that the crushed sandstone does not make a good concreting aggregate as it is too soft. However, sand which can also be produced, is possible to utilise as a concreting sand and large quantities are incorporated into concrete paving and walling products.

3.15 At some quarry sites especially in Calderdale the amount of aggregate product is insignificant.

Sites with planning permission

3.16 There are about 40 quarries which produce at least some crushed rock aggregate, though not necessarily every year. See the table below. Year on year the reserves of crushed rock for aggregate amounts to some 27 million tonnes. 10 million tonnes has recently been added at a quarry at Knottingley which is a matter of public record.

3.17 Sales of crushed rock for aggregate use were 0.762 million tonnes in 2009, with total sales of 0.9mill tonnes (aggregate and non-aggregate). In 2012 the total sales were 0.51 million tonnes (aggregate and non-aggregate).

Interim Summary

3.18 The stock of permissions (new quarries and extensions) issued has generally kept pace with the rate of aggregate production even if, in some cases, the principal need for a new permission has been to replenish access to natural stone resources. Sandstone rock aggregate suitable for concreting purposes and for Type 1 highway uses is not produced.

3.19 Due to the large tonnage or reserves of stone from which crushed aggregate is made the local West Yorkshire market can be fully satisfied for stone of this quality from quarries within West Yorkshire, but it is acknowledged that it is not for high specification uses for which a higher quality stone is required.

3.20 The tonnage with planning permission has been maintained since 2009 maintaining a landbank of around 28 years.

Table 1 - Active quarries which produce aggregate (and in some cases very little)

April 2013

Map no	QUARRY	OPERATOR	AGG TYPE
BRADFORD			
1	Hainworth Shaw Quarry, Keighley	Allan Bailey	Sandstone, grit
2	Bank Top Quarry, Harden	M&M York Stone Products	Sandstone, grit
3	Naylor Hill Quarry, Haworth	Dennis Gillson & Son	Sandstone, grit
4	Bolton Woods Quarry, Bradford	Hard York Quarries	Sandstone, fine
5	Fagley Quarry, Bradford	Hard York Quarries	Sandstone, fine
CALDERDALE			
6	Fly Flatts Delph Quarry, Warley	Rand & Asquith	Sandstone, grit
7	Mount Tabor Quarry, Halifax	Hard York Quarries	Sandstone, grit
8	Sunnybank Quarry/Delph Hill Quarry, Mount Tabor	Mr J Smith	Sandstone, grit
9	Ringby Quarries, Swalesmoor	Mr J Tooby	Sandstone, fine
10	Upper Pule/Scout Moor Swalesmoor	Cleanmet	Sandstone, fine
11	Northowram Hill Quarry, Northowram	George Farrar Quarries	Sandstone, fine
12	Beacon Lodge Quarry, Southowram,	Leo Group	Sandstone, fine
13	Sunny Bank Farm, Southowram	Mytholm Stone Sales	Sandstone, fine
14	Pond Quarry, Lightcliffe	Hard York Quarries	Sandstone, fine
15	Pasture House Farm, Southowram	Marshall plc	Sandstone, fine
16	Pinnar Lane Quarry, Southowram	WS Crossley	Sandstone, fine
17	Cromwell/Crows Nest, Southowram	Marshall Natural Stone	Sandstone, fine
18	Squire Hill Quarry, Southowram	WS Crossley	Sandstone, fine
19	Spring Hill Quarry, Greetland	Spring Hill Stone Sales	Sandstone, grit
20	Elland Edge Quarries, Elland	Rand & Asquith	Sandstone, fine
29	White Rock Quarry	Marshall plc	
38	Wood Top Quarry	Cleanmet	
KIRKLEES			
21	Moselden Quarry, Scammonden	Marshalls Natural Stone	Sandstone, grit
22	Rocking Stones Quarry, Golcar	Johnson Wellfield Quarries	Sandstone, grit
23	Crosland Moor Quarries, Huddersfield	Johnson Wellfield Quarries	Sandstone, grit
24	Windy Ridge Quarry, Holmfirth	S. Peel and Son	Sandstone, grit
25	Hillhouse Edge Quarry, Holmfirth	Saxon Moor Ltd.	Sandstone, grit
26	Appleton Quarry, Shepley	Marshalls Natural Stone	Sandstone, grit
27	Sovereign Quarry, Shepley	Marshalls Natural Stone	Sandstone, grit
28	Temple Quarry, Grange Moor	Holgate Construction Lt	Sandstone, grit
LEEDS			
30	Hawksworth Quarry, Guiseley	Apperley Bridge Aggre. Ltd	Sandstone, grit
31	Moor Top Quarry, Guiseley	RG Stone Sales	Sandstone, grit
32	Blackhill Quarry, Bramhope	Mone Bros Excavations Ltd	Sandstone, grit
33	Arthington Quarry, Arthington	Blackshaw Landfill Ltd	Sandstone, grit
34	High Moor Quarry, Bramham	Samuel Smith Old Brewery	Limestone, mag.

35	Britannia Quarry, Morley	Woodkirk Stone Sales Ltd	Sandstone, fine
36	Howley Park Quarry, Morley	Marshalls Natural Stone	Sandstone, fine
37	Methley Quarry, Mickletown	LafargeTarmac	Sand & gravel
40	WAKEFIELD Darrington Quarry (part), Knottingley	FCC Environment	Limestone, mag.
41	Plasmor Quarry, Knottingley	Plasmor Ltd	Limestone, mag.
Sites permitted but not worked			
	SITE		AGG.TYPE
29	Forge Lane, Dewsbury - K Strands, Horbury - W ROMP Foxholes, Normanton - W ROMP Penbank, Castleford - W ROMP		Sand & gravel Sand & gravel Sand & gravel Sand & gravel

Transport

3.21 The vast majority of aggregate is distributed within or arrives in West Yorks by road based heavy goods vehicle. Locally quarry vehicles can be the predominant goods vehicle. Or they can add to local congestion, for example in Otley.

3.22 Sand and gravel is imported by barge from the Trent to a wharf at Whitwood (Wakefield). Crushed rock limestone is also imported by train from Buxton to Stourton (Leeds) and Swinden Quarry to Cross Green (Leeds). A third rail offloading facility is being opened (also in Leeds) at Cross Green to accept aggregate from the Dales and from the North West. All these terminals also distribute aggregate by road to other local sites.

3.23 In Leeds all existing and potential rail sidings have been safeguarded in the Natural Resources and Waste Local Plan. Several existing and potential wharf sites have also been safeguarded, though a High Court decision in August 2013 requires the safeguarding policies to be re-assessed by a Planning inspector. There are no wharfs or rail siding safeguarding policies in place in any other local authority within West Yorkshire.

4.0 Aggregates: Production, Sales, Imports and landbanks

4.1 Aggregate Sales in West Yorkshire

4.2 Sand and Gravel

West Yorks sand and gravel sales for confidentiality are combined with S Yorks

- million tonnes

2004	0.6
2005	0.5
2006	0.5
2007	0.4
2008	0.4

2009 0.52
 2010 Incomplete survey (AWP fig of 0.26)
 2011 Incomplete survey (AWP fig of 0.24)

2012 West Yorks Survey
Total sales of sand and gravel = 74,681 tonnes (0.07 mill t)
Total estimate of reserves of sand and gravel = 1,670,000 tonnes (1.6 m t)

It is only possible to separate out the West and South Yorkshire figures by applying a proxy to the figure produced in 2012 for West Yorkshire (as above). Prior to this, figures have been combined for confidentiality reasons.

West York's sand and gravel sales (by % proxy)

2004 0.32
 2005 0.17
 2006 0.12
 2007 0.12
 2008 0.116
 2009 0.116
 2010 0.12
 2011 0.08
 2012 0.07

Sales by end use for sand and gravel (W Yorks)- thousand tonnes 2009

Sand for asphalt	0.
Sand for mortar	0.405
Sand for concreting	33,721
Gravel for concrete aggregate	7,080
Other screened & graded gravel	10,859
Sand and gravel for construction fill	0.
Total	52,065

Destination of sales of land won sand and gravel from West and South Yorks in 2009

To Yorkshire and Humber region	476 thousand tonnes
To East Midland	41
Other	4
Total	521

Permitted reserves of sand and gravel for aggregate use West Yorks only 2009

Sand suitable for concreting	248
Other sand	none
Total gravel	83
Undifferentiated sand and gravel	none
Total	331

Sand and Gravel landbank @ end of 2009 (West and South Yorks) based on 7 years sales

2010 Incomplete survey

2011 Incomplete survey

2012 Survey

Total sales of crushed rock for aggregate use = 788,516 tonnes (0.79 m t)

Total estimate of reserves of crushed rock = 28,478,850 tonnes (28.5 mt)

Crushed rock sales by end use 2009 – thousand tonnes

Coated roadstone	none
Uncoated roadstone including surface dressing	268
Fine and coarse concrete aggregate	291
Other screened and graded aggregate	163
Constructional fill and armourstone	40
Total for aggregate use	762
Total non aggregate use	90
TOTAL	852

Destination of crushed rock aggregate sales 2009

100% was within Yorkshire and the Humber Region = 762

Crushed rock landbank @ end of 2009

Total permitted crushed rock reserve = 27,143,000 tonnes

Seven years sales average 2003 – 2009 = 959,000 tonnes

= landbank 28.3 years

Crushed rock landbank @ end of 2012

Total crushed rock reserve = 28,478,850 tonnes

10 years sales average 2002 - 2012 = 1.0 million tonnes

= landbank of 28.4 years.

Summary of crushed rock sales from quarries in West Yorks

4.5 The survey figures suggest a significant decline in production and sales and that annual production may take a good while (if ever) to recover to the 2004 level. For the moment it would appear that the 10 year average annual sales figure is around the 1.0 million tonnes mark.

Recycled and Secondary Aggregate (RSA)

4.6 No survey for RSA was carried out in 2009. The monitoring report referred to sources of secondary aggregate assembled in a report commissioned in 2005 by DCLG from Capita Symonds Ltd. Excluding colliery spoil this identified around 3.48 million tonnes of ash and slag with aggregate potential, arising in the Yorkshire & Humber region.

4.7 A further survey in 2005 by Capita Symonds looked at construction and demolition waste. The tonnage of graded and ungraded recycled aggregate was estimated at 5.25 million tonnes in the region. It was said that the figures should not be considered as robust.

Footnote to the 2012 survey

4.8 Where individual operators have not provided information then an approximate figure has been included based on observations on productive activity at the quarry, records from previous surveys and on the volume/tonnage of unworked reserves which can be estimated from plans. A further variable derives from the fact that all sandstone quarries produce crushed rock (when they do so at all) as a subsidiary material to the production of building stone. Consequently the estimate of reserves is a very rough and ready assessment of the amount of useful building stone which will be retrieved from the as yet unworked reserve, the proportion which will be reject material and the amount of that which can be crushed and sold. Several highly productive crushed rock quarries with large reserves dominate the totals.

Imports of Aggregates to West Yorkshire

4.9 West Yorkshire is and will continue to be a significant net importer of aggregates. This is primarily due to the simple fact that West Yorkshire accommodates 42% of the population of the Yorkshire and Humber Region within 13% of the Region's total land area. The demand for aggregates is high and the area is, in parts, highly urbanised, with many of the remaining aggregate resources no longer accessible as they have been built over, are intersected by roads, rail and canal, or are inaccessible for other reasons (poor road network)

4.10 Conversely, as noted elsewhere in this document, the scale of urban development present within West Yorkshire means that it has very substantial recycled and secondary aggregate (RSA) resources. Discussions with a selection of RSA producers indicate that most RSA produced within West Yorks is also consumed within West Yorks. They range from one producer saying 50% is sent out of the county to another saying none. West Yorks appears therefore to have some significance as an RSA exporter counterbalancing to a degree the import of primary aggregate. However, there is no available reliable data on the spatial distribution of flows of RSA between regions/ sub-regions, and therefore the precise trade balance between primary aggregate and RSA imports/ exports cannot be quantified.

4.11 The most recent published data on the spatial distribution of sales of aggregates produced in the Yorkshire and Humber Region is contained in the Yorkshire and Humber Region Aggregates Working Party Annual Report 2009, as set out in the tables below. No specific data is provided on the quantity of aggregate which is supplied into West Yorkshire or the destination of sales of aggregate from West Yorkshire.

Table 2¹**TABLE 5 – DESTINATION OF SALES OF LAND WON SAND AND GRAVEL AGGREGATE IN 2009 (thousand tonnes)**

Destination → Producer ↓	Yorkshire and Humber Region	North East Region	East Midlands Region	Other Regions	TOTAL Sold by Producer
North Yorkshire	1033	609	-	*	1642
South and West Yorkshire	476	*	41	4	523
E Riding and North Lincolnshire	665	5	82	12	764
TOTAL SOLD TO DESTINATION	2174 (74%)	615 (21%)	123 (4%)	17 (1%)	2929

Table 3²**TABLE 11 – DESTINATION OF SALES OF CRUSHED ROCK AGGREGATE IN 2009 (thousand tonnes)**

Destination → Producer ↓	Yorkshire and Humber Region	North East Region	North West Region	East Midlands Region	Other Regions	TOTAL SOLD BY PRODUCER
North Yorkshire County Council	2176	323	*	*	-	2500
Yorkshire Dales National Park	1685	27	792	14	114	2632
South Yorkshire	1101	-	*	172	8	1282
West Yorkshire	762	-	-	-	-	762
East Riding	64	-	-	-	-	64
TOTAL SOLD TO DESTINATION	5789 (80%)	350 (5%)	792 (11%)	186 (2.5%)	122 (1.5%)	7240

* Small tonnage

4.12 Further data on flows of aggregates between the Yorkshire and Humber sub-regions has been published within the local aggregates assessment for North Yorkshire County Council (January 2013) (this does not include Yorkshire Dales NP). The Collation of the results of the 2009 aggregate minerals survey for England and Wales estimates that in 2009 250,000 tonnes of crushed rock and 240,000 tonnes of sand and gravel were supplied into West Yorkshire from North Yorkshire. They estimate that the West Yorkshire consumption of sand and gravel in 2009 was 810,000³ tonnes and on this basis they estimate that North Yorkshire (excluding YDNP) supplied 30% of West Yorkshire's demand for sand and gravel. Their estimate of West Yorkshire's consumption of crushed rock in 2009 is 2,332,000 tonnes and therefore the estimated proportion of demand supplied by North Yorkshire (excluding YDNP) is 15%.

4.13 It is likely that sand and gravel and crushed rock are also supplied into West Yorkshire from, YDNP, South and East Yorkshire. There is no published data which quantifies flows from these sub-regions to West Yorkshire. However, a rough estimate can be made by assuming that a similar proportion of the aggregates produced in, YDNP, South and East Yorkshire is shipped to West Yorkshire as is the case for North Yorkshire (excluding YDNP). Additionally, East Riding of Yorkshire Council have supplied a draft figure for the import of S&G into West Yorkshire as 150,000tpa for 2013. These estimates are provided in the table below and discussed further.

¹ Yorkshire and Humber Region Aggregates Working Party, 2011. *Annual Report 2009*

² *Ibid*

³ It is unclear how this estimate has been derived, as it was not contained in the published Aggregates Monitoring Report for 2009

4.14 Data on trans-regional aggregate flows has been published in the Draft Derbyshire Local Aggregates Assessment (March 2013). The Derbyshire LAA does not provide sales figures broken down into sub-region; however they estimate that in 2009 9,237 tonnes of sand and gravel and 1,139,009 tonnes of crushed rock were supplied into the Yorkshire and Humber Region from Derbyshire and the Peak District. Given the high level of demand for aggregates within West Yorkshire and its close geographical proximity to Derbyshire and the Peak District it seems highly likely that a significant proportion of this 1.1 million tonnes of crushed rock is consumed within West Yorkshire. Cemex for example haul aggregate by rail from Derbyshire into Stourton, Leeds.

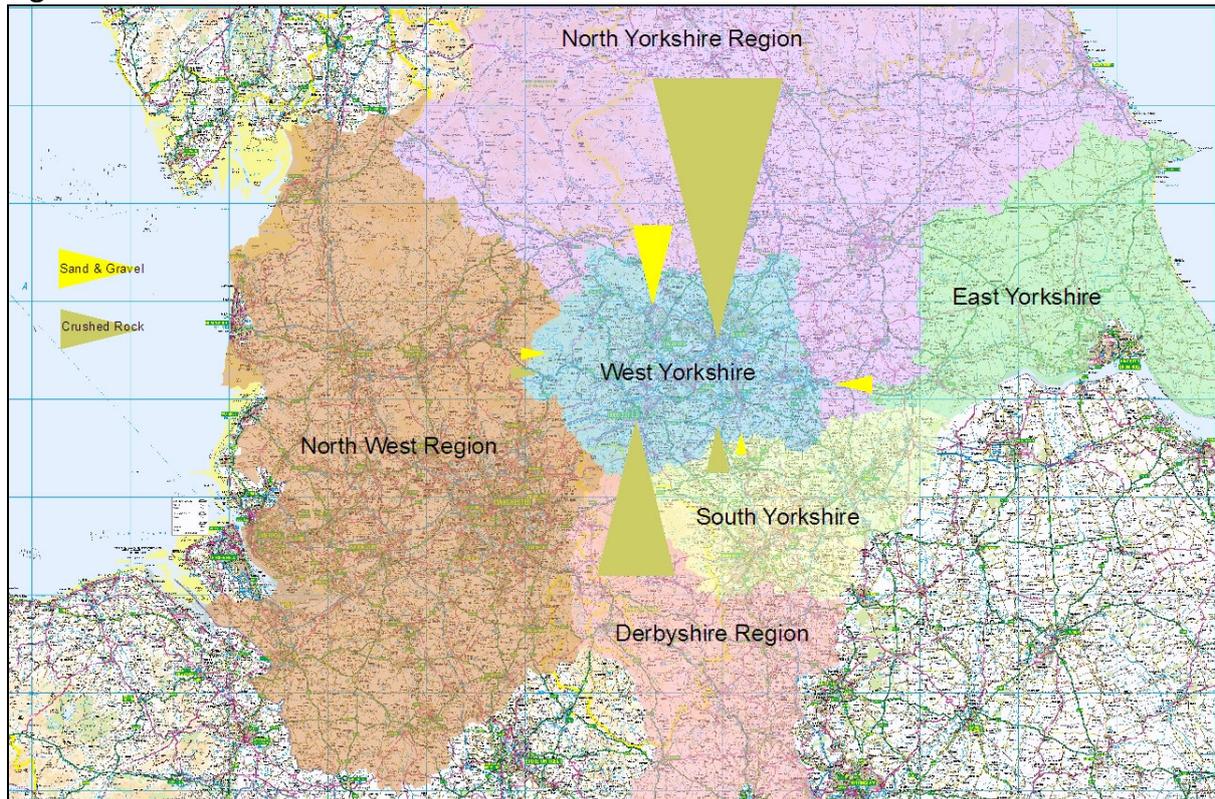
4.15 The most recent published data on sales of aggregates from the North-West sub-region is contained in the *North West Regional Aggregates Working Party Annual Monitoring Report 2010 [Incorporating 2009 statistics]*. This report indicates that of the 5.89 million tonnes of crushed rock aggregate produced in the North West during 2009 3.2% (188,480 tonnes) was exported to Yorkshire and the Humber. Of the 2.5 million tonnes of sand and gravel 6.62% (165,500 tonnes) was exported to Yorkshire and the Humber. Although no sub-regional breakdown is provided, as the most densely populated and geographically closest part of the Region, it seems likely that a significant proportion of the crushed rock and sand and gravel exports from the North West are supplying construction demand within West Yorkshire, although the tonnage will be modest.

4.16 The table below provides a rough estimate of the flows of sand and gravel and crushed rock aggregates into West Yorkshire from adjacent authorities. Given the paucity of published data, excepting North Yorkshire (excluding YDNP), broad assumptions have had to be made about the proportion of total output which is sent into West Yorkshire. In relation to the North West and Derbyshire it has been assumed that the proportion of aggregate exported to Yorkshire and the Humber which is consumed within West Yorkshire is equivalent to the proportion of the Region's population which resides in West Yorkshire (42%). For East Yorkshire and South Yorkshire it has been assumed that the proportion of the total sales of sand and gravel and crushed rock which are shipped to West Yorkshire is consistent with North Yorkshire (14% and 11% respectively). Figure 1 graphically illustrates the magnitude of the imports.

Table 4

Source	Annual Exports of Sand & Gravel to West Yorkshire (tonnes) 2009	Annual Exports of Crushed Rock to West Yorkshire (tonnes) 2009
North Yorkshire	240,000 NB: No Sand & Gravel from Yorks Dales	$250,000 + (1,295,000 * 0.42) = 793,900$
East Yorkshire	$764,000 * 0.14 = 106,960$ (East Riding figure at 150,000tpa for 2013)	$64,000 * 0.11 = 7,040$
South Yorkshire	$523,000 * 0.14 = 73,220$	$1,282,000 * 0.11 = 141,020$
Derbyshire (2009)	$9,237 * 0.42 = 3,880$	$1,139,009 * 0.42 = 478,384$
North-West (2009)	$165,500 * 0.42 = 69,510$	$188,480 * 0.42 = 79,161$
Total	493,570	1,499,505

Figure 1



4.17 The evidence summarised above suggests that West Yorkshire is heavily dependent upon supplies of sand and gravel and crushed rock aggregates from other regions/ sub-regions. If the Collation of the results of the 2009 aggregate minerals survey for England and Wales estimates that West Yorkshire consumes 810,000 tonnes of sand and gravel and 2,332,000 tonnes of crushed rock aggregates per year is given credence, then the calculations estimated in the above table indicate that 61% of West Yorkshire's sand and gravel consumption is met by imports (with 30% being met by North Yorkshire) and 64% of West Yorkshire's crushed rock consumption is met by imports (with 53% being met by NY/YDNP). This influx of aggregates into West Yorkshire may be counterbalanced, to some extent, by exports of RSA; however even so it is certain that West Yorkshire is a major net importer of aggregates.

5.0 Recycled and Secondary Aggregates (RSA) : Assessment and Trends

5.1 A large proportion of West Yorkshire is covered by urban development which comprises a rich potential source of recycled aggregates arising from the demolition of buildings, clearance of sites and construction of new developments.

5.2 Sources of secondary aggregates are much more limited with only one power station, Ferrybridge, producing pulverised fuel ash (pfa) and bottom ash. The North Yorkshire LAA states that 'Ash from Ferrybridge power station, in West Yorkshire, is also disposed of at the Gale Common facility. Ash has been recovered from both the Barlow and Gale Common sites for sale and therefore these facilities also represent potential sources of secondary aggregate. The precise quantities and end use of this material are not known. In future years modest quantities of furnace bottom ash from a small number of municipal, commercial and

industrial waste incinerators will enter the market. One thousand tonnes of burned residual waste creates about one hundred tonnes of bottom ash.

5.3 Very little aggregate derived from mineral waste has been generated in West Yorkshire for many years. Materials such as metallurgical slags, burnt colliery spoil, power station waste and other furnace ash has largely been produced outside of the area. Small amounts of red shale occasionally enter the market, such as a quantity from Sharlston, Wakefield in 2008. Unburned spoil from Prince of Wales Colliery has been used as bulk fill but this is not viewed as an aggregate.

5.4 Paragraph 143 of the National Planning Policy Framework advises planning authorities to, so far as practicable, take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials. Paragraph 145 goes on to confirm that Local Aggregates Assessments should be based upon an assessment of all supply options (including secondary and recycled sources). WRAP defines recycled and secondary Aggregates (RSA) as follows:

5.6 Recycled Aggregates: derived from reprocessing materials previously used in construction. Examples include recycled concrete from construction and demolition waste material and railway ballast.

5.7 Secondary Aggregates: usually by-products of other industrial processes not previously used in construction. Secondary aggregates can be further sub-divided into manufactured and natural, depending on their source. Examples of manufactured secondary aggregates are pulverised fuel ash (PFA) and metallurgical slags. Natural secondary aggregates include china clay sand and slate aggregate (neither of these are produced in the region).

RSA can include the following materials:

Figure 2⁴

Recycled	Secondary	
	Manufactured	Natural
Recycled aggregate (RA)	Blast furnace slag	Slate aggregate
Recycled concrete aggregate (RCA)	Steel slag	China clay sand
Recycled asphalt	Pulverized-fuel ash (PFA)	Colliery spoil
Recycled asphalt planings (RAP)	Incinerator bottom ash (IBA)	
Spent rail ballast	Furnace bottom ash (FBA)	
	Used foundry sand	
	Spent oil shale	
	Recycled glass	
	Recycled plastic	
	Recycled tyres	

⁴ WRAP, 2013, Available online at: http://aggregain.wrap.org.uk/more_information.html

5.8 The table below shows the quantities of wastes which were categorised as ‘Inert Construction and Demolition Waste’ when received at permitted waste facilities located within West Yorkshire during 2011. As can be seen, the largest quantity was material classified as ‘soil’; however significant quantities of mixed construction wastes and glass waste were also handled/ disposed of. A number of other material types were also recorded within the Inert Construction and Demolition Waste category, but in quantities representing less than 1% of the total waste stream and therefore these have not been included in the table.

Table 5

Basic Waste Cat	SOC 1	SOC 2	SOC 3	Tonnes Received	Proportion
Inert/C+D	12-Mineral wastes	Soils	Soils	887,453	47.71%
Inert/C+D	12-Mineral wastes	Construction and demolition wastes	Mixed construction wastes	298,221	16.03%
Inert/C+D	12-Mineral wastes	Construction and demolition wastes	Concrete, bricks and gypsum waste	213,888	11.50%
Inert/C+D	07-Non-metallic wastes	Glass wastes	Glass packaging	153,593	8.26%
Inert/C+D	07-Non-metallic wastes	Glass wastes	Other glass wastes	138,248	7.43%
Inert/C+D	12-Mineral wastes	Waste from waste treatment	Waste from waste treatment	76,967	4.14%
Total				1,860,068	

5.9 The above figures do not represent the total quantity of construction and demolition wastes produced in West Yorkshire, but rather the total quantities of such waste received at permitted facilities – i.e. sites where there is a permit in place issued by the Environment Agency. The figures therefore neither give an indication of the total quantity of the potential RSA resource nor the proportion of this resource which is actually used as RSA. To attempt to understand better the fate of construction and demolition wastes treated within West Yorkshire the table below breaks down the Inert/C&D into the type of facility where the waste was received. As can be seen 48% of the recorded waste was disposed of to landfill with 37% processed through a materials recycling facility or transfer station. An unknown proportion of this 37% may have been recovered as RSA.

Table 6

Facility Type	Tonnes Received	Proportion
Non-Haz Waste Transfer	379,335	20%
Material Recycling Facility	322,120	17%
Inert Landfill (LF)	290,962	16%
Deposit of waste to land (recovery)	218,598	12%
Non Hazardous LF	214,554	12%
Non Haz (SNRHW) LF	147,733	8%
Total	1,860,068	

5.10 Various studies have been carried out in an attempt to understand the quantity of waste with the potential to produce RSA which is generated and the proportion of this waste which is currently being recycled/ reused as RSA. The most up-to-date authoritative study which broke down figures to a sub-regional level is the government commissioned *Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005*. This study estimated that 3,463,198 tonnes of construction, demolition and excavation (CDEW) waste was generated within West Yorkshire in 2005 of which 1,807,458 tonnes (52%) was used to produce recycled aggregates, see table 7 below:

Table 7⁵

Table A11.7: Regional estimates of CDEW recycled by crushers and/or screens, used/disposed of at landfills, and spread on Paragraph 9A(1) and 19A(2) registered exempt sites in 2005 (tonnes)				
English Region and Sub-Region	Yorkshire & the Humber: West Yorkshire			
Adjusted estimate of population of recycling crushers				30
Estimated production of recycled graded aggregate (tonnes)				1,235,946
Estimated production of recycled ungraded aggregate (tonnes)				571,512
Estimated production of recycled soil (excl. topsoil) (tonnes)				234,408
Estimated tonnage of unprocessed CDEW entering licensed landfills, and its use / fate				
	Engineering	Capping	Waste	Total
Clean hard C&D waste	53,386	0	60,714	114,100
Contaminated hard C&D waste	300	0	2,802	3,102
Clean excavation waste	96,087	284,691	327,784	708,562
Contaminated excavation waste	28,191	0	92,545	120,736
Clean 'mixed' CDEW	13,271	661	116,204	130,137
Contaminated 'mixed' CDEW	48	0	16,718	16,766
Other	91,529	0	46,577	138,106
Total	282,812	285,353	663,344	1,231,508
Estimated weight of waste materials (mainly excavation waste) used on Paragraph 9A(1) and 19A(2) registered exempt sites (tonnes)				189,824
Total estimated arisings of CDEW in 2005 (tonnes)				3,463,198

5.11 Additionally the 2005 survey estimated that 420,000 tonnes of pulverised fuel ash, 90,000 tonnes of furnace bottom ash, 30,000 tonnes of incinerator bottom ash, and 50,000 tonnes of glass container waste were generated within West Yorkshire in 2005; a total of an additional 590,000 tonnes of potential secondary aggregate material of which it was estimated that 150,000 tonnes was actually used to produce aggregates.

5.12 A more recent study, *Construction, demolition and excavation waste arisings, use and disposal for England 2008*, was undertaken by WRAP to assess the extent to which Construction and Demolition Waste Arisings had changed between 2005 and 2008. The study found that arisings of inert CDEW had fallen by 7% over the 3 year period but that the proportion of this material which was used to produce aggregates had increased nationally from 47% to 52%, see table 4 below:

⁵ CLG, 2007. Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005

Table 8

	2005	2008	Change
'Hard inert' CDEW generating recycled aggregate	42.07	43.52	+3%
Inert CDEW recovered as recycled soils	4.36	9.21	+111%
Waste (mainly excavation waste) spread on exempt sites	15.44	10.98	-29%
Mainly inert CDEW beneficially used for landfill engineering / capping	9.61	10.60	-47%
Mainly inert CDEW beneficially used to restore former quarries	10.24		
Other largely inert CDEW deposited at landfills as waste	7.90	8.93	+13%
Sub-total (largely inert CDEW)	89.63	83.24	-7%
of which deposited at permitted landfills	27.75	19.53	-30%
Non-inert CDEW deposited at permitted landfills as waste	Not estimated	2.87	n/a
Non-inert CDEW sent for external recovery	Not estimated	0.82	n/a
Total (all lines)	n/a	86.93	n/a ⁶

5.13 If the changes to the national figures found in the WRAP 2008 report are applied to the West Yorkshire figures from the CLG 2005 we can crudely estimate the West Yorkshire figures for 2008 as being 2,011,682 tonnes of RSA produced from a potential waste resource of approximately 3,810,774 tonnes.

Table 9

	2005	2008
Arisings of Inert CDEW	3,463,198 t	3,220,774 t
Quantity of RA Produced from Inert CDEW	1,807,458 t	1,861,682 t
Quantity of Potential Secondary Aggregate Material	590,000 t	
Quantity of SA Produced from Secondary Aggregate Material	150,000 t	
Total Potential RSA Making Resource	4,053,198 t	3,810,774 t
Total RSA Produced	1,957,458 t (48%)	2,011,682 t (53%)

⁶ WRAP, 2010. Construction, demolition and excavation waste arisings, use and disposal for England 2008

5.14 The level of RSA production estimated above represents a very significant contribution to meeting the total demand for construction aggregates. However it should be born in mind that the quality and characteristics of RSA varies widely. Some higher quality recycled aggregate products are now emerging, for example crushed concrete only, which can be re-incorporated as a percentage of new ready mix concrete. Similarly some highway planings are being reincorporated into new asphalt. One operator now claims a blend of recycled aggregate equivalent to carboniferous limestone hard core which can be successfully used in areas of paving and some load bearing reinstatements. It is likely to remain the case that a high proportion of the RSA aggregate produced is not suitable for high specification uses.

5.15 The national and regional guidelines for aggregates provision in England 2005-2020 made an assumption that 133 mt of the total of 431 mt of construction aggregates which would be needed in the Yorkshire and Humber Region between 2005 and 2020 would be made up by RSA (31%). Based on these figures the estimated annual level of RSA production in West Yorkshire (2,011,682 t) makes up approximately 24% of the total estimated 8,312,500 tonne annual need for RSA in the Yorkshire and Humber Region.

5.16 The Construction and Demolition survey was completed in 2008, unfortunately it is the last reliable survey undertaken. However, each year the LAA is reviewed the robustness and status of surveys produced at National and Regional level will be considered and the LAA appropriately updated.

Safeguarding

5.17 The Leeds Natural Resources and Waste Local Plan safeguards all but one recycled aggregate site within the district. The plan also allocates a large new site to compensate for the eventual loss of a non-safeguarded site. None of the aggregate recycling sites in the other local authorities within West Yorkshire are currently safeguarded.

6.0 APPRAISAL OF AGGREGATES IN W YORKS

6.1 Local aggregate assessments are obliged to assess the demand for and supply of various aggregates; recycled, secondary, marine, import and exports from adjacent areas, and land won resources. It is not expected that the pre-existing system of regional and sub-regional apportionments will simply be rolled forward but the figures may be useful as a guide to the future. In compiling these assessments (as stated in the NPPF) the previous 10 years of sales should be used as a guide to demand. Any other guidelines assimilated into the assessment process.

Demand Factors – population and density

6.2 The national guidelines suggest that across England per capita consumption of aggregate is around 3 tonnes per head per annum, of which 37% is land won sand and gravel, 53% land won crushed rock aggregate and 10% marine sand and gravel.

6.3 The British Geological Survey (BGS) national collation of the 2009 aggregate mineral surveys indicates that total consumption of aggregate in the YH region was 10,679 million tonnes, with West Yorks consumption of 3,142 million tonnes.

6.4 The 2012 mid year population of the region is 5,316,700.

6.5 On these figures this equates to per capita consumption of 2 tonnes per head across the region, but around 1.5 tonnes per head for West Yorkshire. Some caution in using these figures is needed as major infrastructure projects (for example upgrading the A1) may affect the breakdown across sub areas.

6.6 The lower 1.5 tonnes per capita would indicate an overall demand in West Yorkshire of around 3.1 to 3.3 million tonnes per annum, more than twice the tonnage being produced internally, suggesting imports into the county of well over 1 million tonnes per annum. Table 11 below shows a more representative breakdown of likely consumption, with estimates of Sand and Gravel Consumption of 810,000tpa and Crushed Rock Consumption of 2,330,000tpa based on 2009 figures (3.14mill tpa).

6.7 There is an on-going discussion around the use of housing completions for the last 10 years against housing projections for the next 15 years in order to quantify the likely demand for aggregates. Due consideration has been given to the possibility of using housing figures as a proxy, however the main barrier currently to this kind of forecasting in West Yorkshire is the robustness of the projected housing figures. In West Yorkshire each of the 5 separate unitary authorities are at different stages in their plan preparation and consequently their housing projection figures. The ratification of the projected housing figures for the majority of the authorities has not been completed, examined or adopted, consequently it is considered that the use of housing projections at this juncture is potentially quite unreliable.

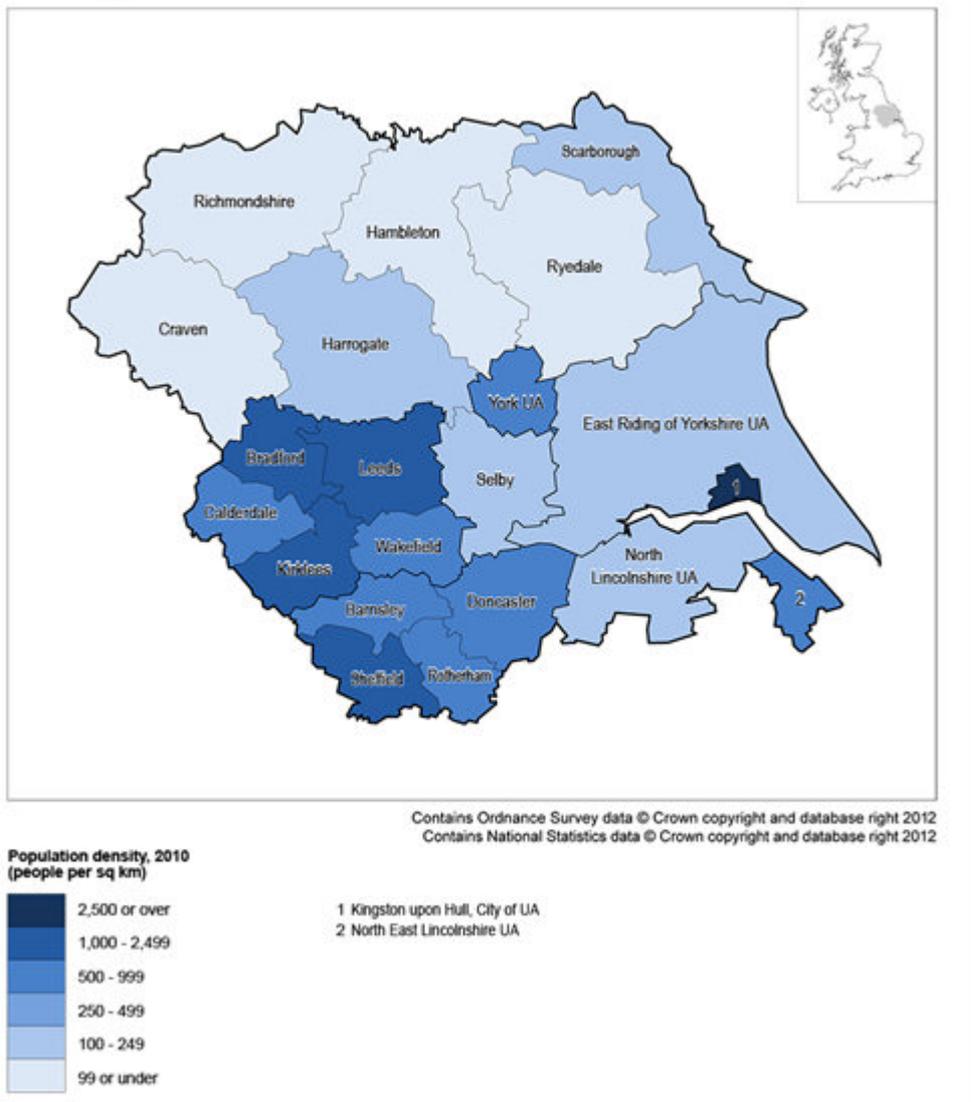
6.8 Additionally, the utilisation of just housing figures can underestimate the demand, as other types of development are not included, such as retail, industrial and community facilities.

6.9 However, due consideration will be given each year the LAA is updated on whether it is appropriate to utilise housing figures as a proxy. It is considered that within the next year most of the West Yorkshire authorities will have proceeded to examination and will have adopted Local Plans which have robust housing figures which can be relied upon and considered for future assessment in the demand for aggregates.

6.10 However, in the meanwhile the general forecast is growth in households and the accompanying requirement for new service, cultural and employment provision, with the need for improvements to infrastructure (see above) which all point towards a maintained and possibly increased requirement for aggregate, other things being equal.

Figure 3

Yorkshire and The Humber population density: by local or unitary authority, 2010



Potential Role of Marine Aggregate (sand and gravel)

6.11 There is no evidence that any marine aggregate currently enters the West Yorkshire market. Indeed very little marine aggregate enters the regional market – less that 200,000 tonnes per annum in the Hull area and smaller amounts into North Yorkshire (circa 40,000tpa). This is despite the fact that the adjacent part of the North Sea contains hundreds of millions of tonnes of good quality sand and gravel. Indeed it is of a higher quality than most of the indigenous sand and gravel in West Yorkshire.

6.12 In 2013 all regional mpas and the Crown Estate funded and commissioned a marine aggregate study. The purpose of the study was to establish the reasons why so little marine sand and gravel is utilised in the region and to establish the barriers to its much greater use.

The study was published in February 2014. The study explains that the cost of transportation from the Humber to the large markets of West and South Yorkshire are currently not competitive with the price of land won aggregate hauled from Nottinghamshire and North Yorkshire into the conurbation. It suggests the gap is not very large and will narrow in the period from 2020 onwards as land based extraction becomes more costly to sustain.

6.13 However there is a lack of infrastructure for landing the aggregate and transferring it for transport to the conurbation. The report indicates that as the cost gap narrows further there will need to be investment in wharves, sidings, trains and barges to facilitate large scale transfer of aggregate westward from the Humber. In the shorter term of 5 years it is possible that small scale transfer by canal barge may begin using existing facilities and equipment.

6.14 In August 2013 a challenge to the policy of Leeds CC of safeguarding wharves for their potential use in the shipping of aggregates was upheld at the High Court. The policies will now be reconsidered by the council and the Planning Inspectorate later in 2014.

Future Supply

6.15 Given West Yorkshire's reliance on aggregates imported from adjoining areas to fulfil its construction needs, security of the supply patterns which fulfil West Yorkshire demand is a key issue relevant to the continuing economic development of the Leeds City Region. Security of supply is affected by three main factors:

- geological/ resource issues: in terms of the extent to which the remaining aggregate resources will allow current extraction levels to be sustained into the future;
- political issues: in terms of the willingness of neighbouring mineral planning authorities to continue to permit the scale of minerals extraction necessary to both satisfy indigenous demand and provide for continued exports to West Yorkshire, and;
- market issues: in terms of developers' continued willingness to invest in minerals extraction, the relative costs of aggregates from different sources (marine won, land won and RSA) and any factors which may affect the costs associated with the extraction, transportation and processing of minerals in the future.

6.16 In relation to political resource factors, the extent to which neighbouring authorities are likely to continue to be willing and able to provide for a level of minerals extraction which facilitates exports into West Yorkshire can be gauged through the future extraction provisions and commentary set out in their LAAs and Local Plans . Both the LAA of North Yorkshire and the draft LAA of Derbyshire broadly set future supply apportionments based on historic average sales levels. However the exception to this is aggregate provision from the Yorkshire Dales National Park (YDNP) and Peak District National Parks (PDNP).

6.17 The draft Derbyshire LAA proposes to reduce the aggregate apportionment of the PDNP by 10%, with an equivalent increase in the apportionment for the remainder of Derbyshire outside of the national park. Whilst this policy is intended to provide for a gradual reduction in the proportion of Derbyshire's aggregate which is supplied from sources within the PDNP, it is not intended to reduce the overall quantity of aggregate

supplied from Derbyshire. Furthermore the draft LAA specifically commits to maintaining aggregate production at a level which meets the demand from other regions, stating:

6.18 'It is apparent, therefore, that Derbyshire and PDNP is a significant net exporter of aggregate grade crushed rock to other areas, amounting to an average of around 8 million tonnes each year. Derbyshire has significant resources of hard rock compared to many other areas in the country and it will be important, therefore, to maintain this level of supply in order to sustain and stimulate national economic growth.'

6.19 The North Yorkshire Sub Region LAA also provides for a continuation of historic supply levels within the administrative area. It does not make any apportionment whatsoever for future aggregate provision from within the National Parks. The YDNP is a significant supplier of crushed rock aggregate, with part of this supply comprising relatively scarce high specification aggregates suitable for road surfacing. No specific distribution figures from the YDNP to West Yorkshire are available. The tonnage is not likely to be insignificant; Lafarge Tarmac rail aggregate from Swinden Quarry to their complex at Cross Green in Leeds.

6.20 Furthermore the North Yorkshire SR LAA comments that, *'in practice the Yorkshire Dales National Park has a substantial landbank of crushed rock and is expected to be able to continue maintaining supply over the period to 2030 and beyond'*. Therefore it is not considered that the lack of political support for either maintaining aggregate provision within the YDNP, or compensating for a reduction in provision from the YDNP with an equivalent increase in apportionments elsewhere within North Yorkshire, is a significant threat to the future continuity of aggregates supply to West Yorkshire.

6.21 The North Yorkshire LAA does highlight potential mid-term supply issues for sand and gravel, which could impact on West Yorkshire; however they also confirm that:

6.22 'The scale of the shortfall (27.5mt) may be impacted substantially by the outcome of a number of current planning applications for sand and gravel extraction which, in total, contain an estimated 25.3mt of reserves. If permitted, the reserves in these applications would eliminate the large majority of the identified shortfall.'

6.23 Although it is acknowledged that not all of the additional resource currently proposed for extraction in North Yorkshire may ultimately be permitted, the fact is that the minerals industry have already applied for sufficient additional reserves to meet the identified shortfall. This industry interest implies that the remaining resource within North Yorkshire/YDNP is present in quantities capable of continuing to supply a significant proportion of West Yorkshire's needs into the future. Whether this is found to be environmentally acceptable within North Yorkshire/YDNP is another matter.

6.24 A revised draft LAA for South Yorkshire was published by Rotherham and Doncaster councils in August 2013. This LAA also proposes apportionments based on a continuation of historic sales figures but identifies that the apportionment for sand and gravel is unlikely be met due to an identified significant shortfall in permitted and proposed sand and gravel reserves and an apparent lack of interest by the minerals industry in promoting additional sites. The draft LAA therefore implies that South Yorkshire is likely to become increasingly reliant on sand and gravel supplies from Nottinghamshire.

6.25 Conversely the draft LAA identifies a very large land bank of crushed limestone aggregate within South Yorkshire, a significant proportion of which is used as a concreting aggregate. Therefore, whilst any flows of sand and gravel from South Yorkshire to West Yorkshire are unlikely to be sustained into the future, the substantial remaining limestone reserves may play a role in meeting West Yorkshire's future demands both for concreting and non-concrete construction purposes.

6.26 In relation to the role of market forces in supply patterns, it is true to say that whatever the preference of minerals planning authorities in terms of supply patterns and aggregate sources, the actual real world factors which will determine the sources of the aggregated used in West Yorkshire are price and availability (both of course influenced by the environmental cost of extraction) plus quality considerations. The above assessment indicates that the current sources of aggregate imports into West Yorkshire are broadly likely to be capable of being sustained in the short to medium term, with each of the MPAs that have historically and/or currently supplied West Yorkshire making no indication through their LAAs, or the through the Aggregates Working Party, that they intend to reduce or restrict supplies.

6.27 It was a concern for a number of years that West Yorkshire may become totally reliant on other areas outside of West Yorkshire for Sand and Gravel. The main site located in Leeds (Methley) was drawing to a close and it was unclear how this was to be replaced. However, there are now two sites that have come to the forefront, Forge Lane in Kirklees and The Strands in Wakefield with a total capacity of 1.6mill tonnes (9500,000 tonnes 650,000t respectively). Neither site is currently operational, but both have full planning permission. Based on these reserves of 1.6mill tonnes which are indicated to be worked over a 8 year period, the total tonnage per annum for the two sites is circa 200tkpa.

6.28 There is no doubt that West Yorkshire is lacking in resources of sand and gravel which is environmentally acceptable to extract. A shortfall for remaining of circa 610ktpa (810ktpa usage table 11 – 200ktpa). However, with continuing provision through imports from other authorities and the potential for longer term marine aggregate there appears to be no crisis of supply into West Yorkshire. It should also be noted that future supply market will be influenced by any changes in the quality, price and availability of RSA and, by way of illustration, the extent to which crushed limestone can be substituted for sharp sand and gravel in concrete manufacture.

7.0 SUMMARY AND CONCLUSIONS

7.1 It can be seen from the above report that West Yorkshire is incapable of meeting its own needs for concreting quality aggregate, as no such material is produced within West Yorkshire, except where soft sand is incorporated into concrete building and paving blocks. For all higher quality specifications the aggregate as either crushed rock or sand and gravel has to be imported into the five districts. Furthermore the indications for per capita consumption of aggregate would suggest only about one third of total aggregate requirement is capable of being produced within the county.

7.2 In terms of trends it is possible that the need for virgin aggregate may be tempered by improved efficiency and economy of use and by improved specifications for secondary and recycled aggregates leading to their greater market penetration. However – all things

considered -It seems unlikely that demand overall will fall further and may revive from its current low point in the years ahead.

7.3 Therefore it can be concluded that the objective in setting an aggregate apportionment for West Yorkshire must exclude the possibility of meeting our own aggregate needs, but rather instead to set a level of future provision for the lower quality aggregates which the county is capable of producing which is sustainable and appropriate.

7.4 The NPPF advises that a Local Aggregate Assessment should set apportionment *based on a rolling average of 10 years sales data and other relevant local information, and an assessment of all supply options*. As set out in the main body of this report, the average historic annual sales of Sand and Gravel and Crushed Rock Aggregates from the County is as follows:

Table 10

Aggregate Type	Average Annual Tonnage
Sand and Gravel (W Yorks)	130,000 (0.13m)
Crushed Rock	910,000 (0.9m)

7.5 The other relevant local information to be considered is set out in section 6 of the above report and in table 11 below, which utilises The British Geological Survey (BGS) national collation of the 2009 aggregate mineral surveys and tonnage per capita:

Table 11

Data Type	Annual Tonnage
West Yorkshire Apportionment of Regional Guidelines for Aggregates Provision in England: 2005-2020 (based upon 2009 sub-regional sales distribution) – West & South Yorkshire Sand and Gravel	650,000
WY Apportionment of Regional Guidelines for Aggregates Provision in England: 2005-2020 (based upon 2009 sub-regional sales distribution) – WY Crushed Rock	1,170,000
Estimate of West Yorkshire Sand and Gravel Consumption set out in the Collation of the results of the 2009 aggregate minerals survey for England and Wales	810,000
Estimate of West Yorkshire Crushed Rock Consumption set out in the Collation of the results of the 2009 aggregate minerals survey for England and Wales	2,330,000
Estimate of Recycled & Secondary Aggregate Produced in West Yorkshire in 2008	2,010,000
Estimate of Land Won Sand and Gravel Imported to WY from other Regions/ Sub-Regions in 2009	490,000
Estimate of Land Won Crushed Rock Imported to W Y from other Regions/ Sub-Regions in 2009	1, 499, 505

7.6 The historic average sales figures for West Yorkshire set out in table 10 (0.13mill tpa S&G 0.91 mill tpa crushed rock) fall short of the sub-regional apportionment of 0.37 mill tpa S&G and 1.2mill tpa crushed rock (based on the national and regional guidelines for aggregate provision). The historic sales figures (0.13mtpa & 0.91mtpa) also fall short of the 2009 estimate of West Yorkshire consumption set out in table 11 (0.8mill tpa S&G and 2.3 mill crushed rock).

7.7 Based on 10 years sales for crushed rock the minimum landbank should be 9.1 million tonnes. It is in fact over 28 million tonnes. Due to the issue of quality this does not however mean a sufficiency of crushed rock aggregate can be produced in the county; indeed this will need to be imported. However traditional levels of production inside West Yorkshire can be maintained.

7.8 With regard to sand and gravel it is problematic to disentangle the West Yorkshire figures on sales and reserves; however based on the proxy for 10 years sales set out in section 4.2, the landbank for West Yorkshire should be 1.3 million tonnes, the reserves, based on the two sites with planning permission (Forge Lane and The Strand), is set at 1.6milltonnes and therefore it is arguable that the landbank is met. However, it is apparent that the production at these two sites (expected output approx. 0.2mtpa over 8 yrs) is not able to achieve the consumption for West Yorkshire (set at 0.81mtpa in table 11), nor achieve the breadth of quality of aggregates that are required for concreting. Consequently, like crushed rock the bulk of concreting quality sands and gravels will need to be imported into West Yorkshire to meet the shortfall of approx. 0.6mtpa (0.81mtpa -0.2mtpa) and the required quality.

7.9 In conclusion, to meet West Yorkshires requirements the apportionment for sand and gravel could in theory be raised to the expected output at the two sites (e.g. 0.2mtpa) however the reliance on one site primarily (Forge Lane) for the apportionment of S&G is considered a high risk and therefore a continued apportionment based on the 10 years average sales is considered appropriate for both S& G and crushed Rock. However, this apportionment has to be set against the consumption of aggregates, which indicates that West Yorkshire is far from self-sufficient in sand and gravel and heavily reliant on the import of both sand & gravel and crushed rock to achieve the quantities required and required quality. Nevertheless, any opportunities that arise within West Yorkshire to increase sand and gravel production, should always be given due weight to increase self-sufficiency and sustainability.

7.10 It is acknowledged that apportionment for West Yorkshire remains low, however the very significant contribution of West Yorkshire to the supply of Recycled and Secondary Aggregates assists in mitigating the reliance on adjacent major aggregate producing Regions

7.11 Therefore:

1. West Yorkshire is considered to be self sufficient for domestic quality crushed rock which is of a relatively low quality,
2. West Yorkshire is capable of producing 0.2mtpa of Sand and Gravel, however we consumed 0.81mtpa in 2009

3. West Yorkshire still needs to rely on imports of sand and gravel from authorities within the Region and beyond with between 60%-70% of the consumption met by imports and potentially West Yorkshire will require more of sand and gravel.
4. A continuing supply of high grade crushed rock from authorities within the Region and beyond, with a reliance of 64% imports.
5. West Yorkshire will have to continue to rely on imports, but should seek to increase the proportion of S&G and crushed rock it produces as it will promote self-sufficiency, reduce the carbon footprint and overall is more sustainable.
6. West Yorkshire authorities need to encourage the use of Recycled Secondary Aggregates through Local Plans, via safeguarding and taking a positive view of proposals to add value recycling products.
7. In the longer term marine aggregates are likely to be provided a supply of aggregates, but this is unlikely to be for 10+ years due to a variety of reasons, but primarily lack of infrastructure and the economics do not currently 'stack up'.
8. The apportionment set out above, of 0.13mtpa for sand and gravel and 0.91mtpa for crushed rock is considered a reasonable apportionment for West Yorkshire and an approach accepted by the Yorkshire and Humber AWP.

8.0 ROLE OF LOCALISM IN AGGREGATE SUPPLY

8.1 The Localism Act and the National Planning Policy Framework (NPPF) places a duty on local planning authorities and other bodies to cooperate with each other to address strategic issues relevant to their areas. The duty requires continued constructive and active engagement on the preparation of development plan documents and other activities relating to the sustainable development and use of land, including minerals.

8.2 Paragraph 181 of the NPPF states that 'Local planning authorities will be expected to demonstrate evidence of having successfully cooperated to plan for issues with cross-boundary impacts when their local plans are submitted for examination'. This document will help demonstrate the joint working taking place between authorities and will accompany the submission of local plan documents.

8.3 The 'duty to cooperate' is set out in Section 110 of the Localism Act. This applies to all local planning authorities, national park authorities and county councils in England. The new duty relates to sustainable development or use of land that would have a significant impact on at least two local planning areas or on a planning matter that falls within the remit of a county council; It requires that councils:

- set out planning policies to address such issues;
- 'engage constructively, actively and on an ongoing basis' to develop strategic policies; and
- consider joint approaches to plan making.

8.4 Paragraph 17 of the NPPF sets out the strategic issues where cooperation might be appropriate. Paragraph 178 to 181 of the NPPF gives guidance on 'planning strategically across local boundaries', and highlights the importance of joint working to meet development requirements that cannot be met within a single local planning area.

Securing the necessary aggregate

8.5 Bradford, Calderdale, Kirklees, Leeds and Wakefield councils [together with Derbyshire CC, NYCC, East Riding, East Midlands, YDNP] have a relationship in the supply and use of primary minerals.

8.6 The purpose of this statement is to set out how the councils will proceed in liaison with the AWP's to ensure the development of a consistent and complementary policy approach towards minerals supply. The authorities will seek to cooperate in the areas of joint or further work set out below.

1. The provision and sustainable use of aggregate minerals ensuring the sufficient supply of material to provide the infrastructure, buildings and goods
2. Sharing advice and information (including aggregate monitoring information) to complement the preparation aggregate assessments such as landbanks, locations of permitted reserves relative to the market, and capacity of reserves.
3. The councils will continue to work together in future to prepare joint or individual local aggregates assessments and also co-operate in the production of wider regional aggregate assessments within their relevant aggregate working party areas.
4. The councils will share information as soon as available, including draft local plan consultation documents prior to the consultation taking place to allow early engagement.

8.7 Agreements to be sought

Under Duty to Cooperate the West Yorkshire authorities will confirm and/or seek agreement with NYCC, East Riding, Derbyshire and Yorkshire Dales that these authorities are continuing to include in their plans that aggregates will continue to be exported to West Yorkshire