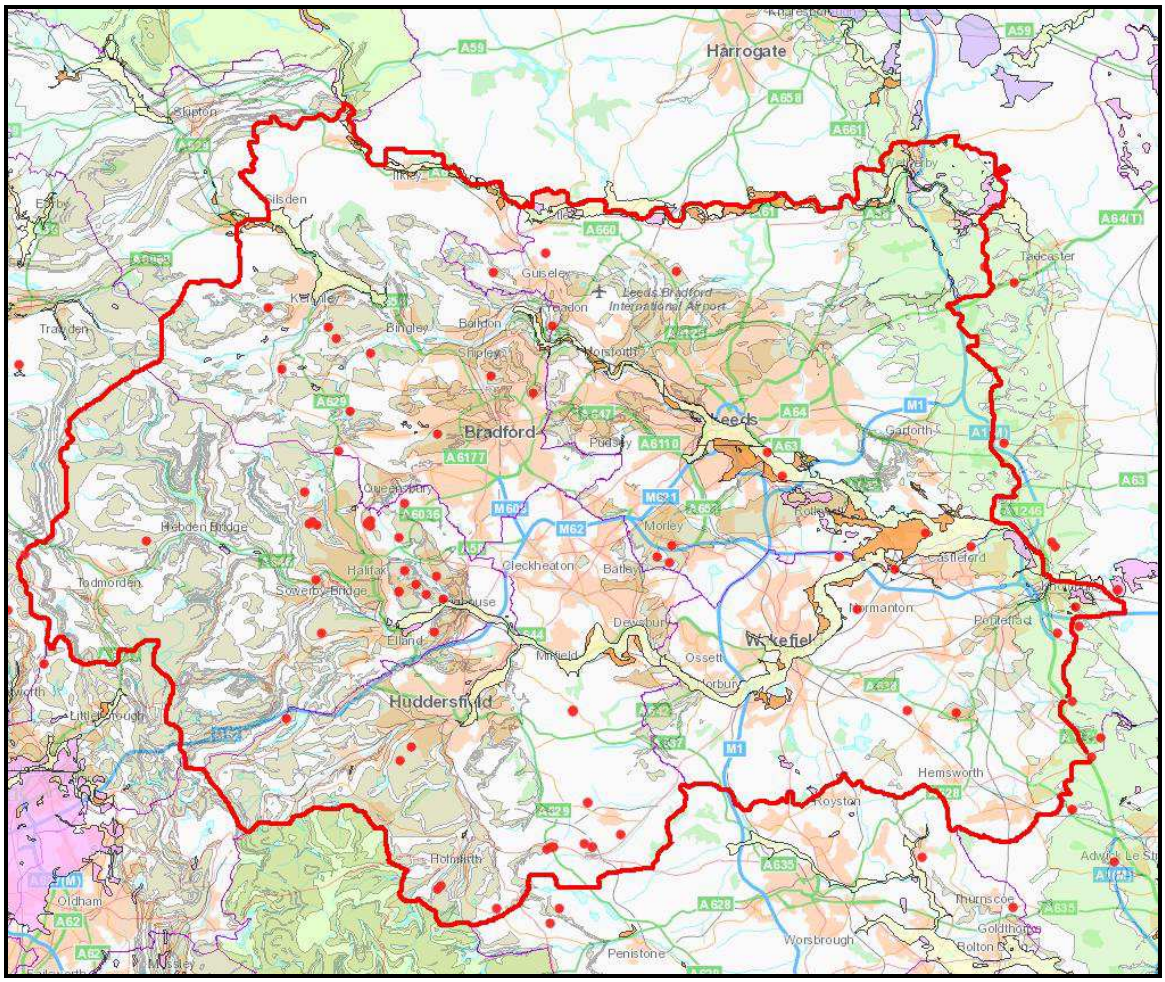
WEST YORKSHIRE COMBINED AUTHORITY

Local Aggregate Assessment for West Yorkshire 2015 (2014 Data)



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Final Version December 2015

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EXECUTIVE SUMMARY

This document is the third of the annual Local Aggregate Assessments (LAA) undertaken jointly by the five West Yorkshire Mineral Planning Authorities: of Leeds, Bradford, Kirklees, Wakefield and Calderdale. An LAA is an annual report designed to provide evidence to support both the Minerals Industry and Mineral Planning Authorities in planning for the future provision of aggregates.

The LAA should be updated annually and this document represents the Local Aggregate Assessment for West Yorkshire 2015, incorporating 2014 data, which updates the content of the Local Aggregate Assessment for West Yorkshire 2014 (2013 Data).

The LAA 2015 finds that the previously identified trend of declining sand and gravel sales has continued into 2014 with total sand and gravel sales from West Yorkshire falling to a new low of less than 20,000 tonnes. The recovery of the West Yorkshire crushed rock aggregate quarrying industry from its slump between 2008 and 2011 is also continuing with sales for 2014 above 1 million tonnes for the first time in 6 years.

The tables below show the 10 year sales data for West Yorkshire which falls significantly below the level which would be required to meet the *National and regional guidelines for aggregates provision in England 2005-2020*:

Sand and Gravel Sales

Note: All Figures in Million Tonnes	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**Ten Year Average**
W Yorks	0.17	0.12	0.12	0.12	0.12	0.12	0.08	0.07	0.05	-	**0.10**

Crushed Rock Sales

Note: All Figures in Million Tonnes	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**Ten Year Average**
W Yorks	1.20	1.10	1.10	0.90	0.90	0.53	0.43	0.79	0.78	1.03	**0.88**

However, it is concluded that the 10 year sales averages calculated above are not an appropriate foundation upon which to calculate the aggregate landbank for West Yorkshire. This is both because of the obvious effect of the recession on the sales average and because the average sales figure is considered to be inadequate in terms of West Yorkshire making a proportionate contribution towards meeting the guideline aggregate supply figure for the Yorkshire and the Humber.

An alternative methodology to derive apportionments for the future supply of aggregates has been therefore been used. This alternatively methodology utilises the 10 year sales averages as the starting point but applies a percentage uplift to arrive at an increased aggregate apportionment figure to be used as the basis for calculating landbanks. This uplift percentage figure is an estimate of the increase in aggregates sales which would be required to deliver on planned future housing growth and associated infrastructure demands.

West Yorkshire Aggregate Landbanks 2014

Note: All Figures in Million Tonnes Unless Otherwise Stated	Reserve	Annual Sales Average 2005-2014	25 % Uplifted Aggregate Apportionment	Landbank
Sand and Gravel	880,000	100,000	125,000	**7 Years 0 Months**
Crushed Rock	25,700,000	880,000	1,100,000	**23 Years 4 Months**

The Sand and Gravel landbank of **7 Years** is equal to the minimum landbank advocated within paragraph 145 of the National Planning Policy Framework (NPPF). This landbank can be seen to have increased by 6 months relative to the 2014 LAA landbank; this increase is due to the continuing decline in sales and the depressing effect this has on the 10 year sales average figure.

The crushed rock aggregate landbank of **23 Years and 4 Months** is 13 years and 4 months greater than the 10 year minimum advocated in the NPPF. This landbank can be seen to have reduced by 4 years relative to the 2014 LAA landbank; this reduction is primarily due to a reappraisal and consequent revision down of sandstone aggregate reserve estimates in Bradford and Calderdale.

Although neither the crushed rock nor the sand and gravel landbank now falls below the relevant NPPF guideline level, it should be noted that the landbank length guidelines included within the NPPF are minimums not maximums. Mineral Planning Authorities should also consider the other relevant information set out within this report when considering the need for the release of additional aggregate reserves. In particular, relevant considerations when assessing proposals for new minerals development may include:

- The unsuitability of a substantial proportion of the currently permitted reserves of crushed rock aggregate within West Yorkshire for higher specification uses, such as concrete making and roadstone.
- The continuing dependence of West Yorkshire upon neighbouring authorities for the majority of its construction aggregate needs, particularly in relation to concrete and roadstone grade crushed rock aggregates and concrete grade sand and gravel.
- The reliance of West Yorkshire upon high specification crushed rock sourced from the Yorkshire Dales National Park; an area where the NPPF indicates extraction should be reduced (as far as is practicable).
- The relatively low contribution which West Yorkshire currently makes to the overall supply of construction aggregates within the Yorkshire and Humber Region, particularly in relation to sand and gravel.
- The general undersupply of aggregates within the Yorkshire and Humber Region when assessed against the National and regional guidelines for aggregates provision in England 2005-2020.
- The benefits of pursuing any sustainable opportunities to contribute towards the supply of the generally lower specification aggregates produced within West Yorkshire, and continuing to provide facilities for the production of recycled aggregates, in terms of compensating for West Yorkshire's economic dependence upon primary aggregates quarried from neighbouring authorities.

1. INTRODUCTION/ BACKGROUND

1.1. Background

1.1.1. Minerals are important to the local and national economy and underpin the fabric of our everyday lives. Uses of minerals range from building stones, to brick clay, to chemical and construction aggregates. Maintaining continuity of supply of aggregates is particularly vital to the economic wellbeing of the country and therefore the English planning regime provides for a specific managed aggregate supply system based upon Local Aggregate Assessments (LAAs).

1.1.2. All of the local authorities within England which have responsibilities for minerals planning (Minerals Planning Authorities – MPAs) are required to plan for a steady and adequate supply of aggregates by:

- preparing an annual Local Aggregate Assessment, either individually or jointly by agreement with another or other mineral planning authorities, 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 sources), and;
- participating in the operation of an Aggregate Working Party and taking the advice of that Party into account when preparing their Local Aggregate Assessment;

1.1.3. 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. The LAA is intended to provide evidence to inform both MPAs, in exercising their forward plan making and Development Management functions, and the Minerals Industry, in planning their future investment decisions.

1.1.4. National Planning Practice Guidance confirms that a Local Aggregate Assessment should contain three elements:

- a forecast of the demand for aggregates based on both the rolling average of 10-years sales data and other relevant local information;

- an analysis of all aggregate supply options, as indicated by landbanks, mineral plan allocations and capacity data e.g. marine licences for marine aggregate extraction, recycled aggregates and the potential throughputs from wharves. This analysis should be informed by planning information, the aggregate industry and other bodies such as local enterprise partnerships; and

- an assessment of the balance between demand and supply, and the economic and environmental opportunities and constraints that might influence the situation. It should conclude if there is a shortage or a surplus of supply and, if the former, how this is being addressed.

1.1.5. In addition to the government's planning practice guidance it should be noted that the Planning Officers' Society and the Mineral Products Association jointly published a Practice Guidance Document on the Production and Use of Local Aggregate Assessments in April 2015. Although non-statutory this document provides a very useful health check to ensure the robustness of an LAA.

1.1.6. This LAA document is the third of the annual LAAs undertaken jointly by the five West Yorkshire Local Authorities: Bradford, Leeds, Wakefield Kirklees and Calderdale, who, as Unitary Authorities, are responsible for Minerals Planning in the West Yorkshire sub-region. The first West Yorkshire LAA was ratified in December 2014 by the West Yorkshire Combined Authority/ Leeds City Region portfolio holders and contained data relating to minerals supplies and reserves from 2012.

1.1.7. The second West Yorkshire LAA, covering 2013, was ratified and adopted by the Leeds City Region Planning Portfolio Holders on Friday the 18th of September 2015. The second LAA built upon and substantially revised the contents of the 2012 LAA and adopted a new landbank calculation methodology incorporating a planned housing growth uplift. This third LAA document updates the 2014 LAA, reporting upon the most recent 2014 data.

1.1.8. 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.

1.1.9. Following consultation and the implementation of any necessary amendments, the West Yorkshire Local Aggregates Assessment 2015 will be presented to the West Yorkshire Combined Authority/ Leeds City Region Portfolio Holders for formal ratification.

1.2. Geographical Context

1.2.1. 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.

1.2.2. The Office of National Statistics estimates that West Yorkshire currently has a population of 2,290,000 and that by 2037 West

Yorkshire's population will have increased by 270,000 to 2,560,000 people, an increase of 12% with a corresponding increase in households. This population and household growth, will, in turn, create the need for new homes, employment opportunities and improvements in transportation and other infrastructure.

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

1.2.4. Given its minerals resource limitations and heavily urbanised nature West Yorkshire is not able to independently meet the high aggregate consumption requirements of the modern construction industry, particularly in terms of concreting aggregate and roadstone. Therefore mineral flows into West Yorkshire are considered to be of greater significance than indigenous production in terms of safeguarding adequate and steady supplies of the aggregates consumed by the West Yorkshire economy.

1.3. Transportation of Aggregates

1.3.1. The vast majority of aggregate is distributed within or arrives in West Yorkshire by road based heavy goods vehicle. Locally, quarry vehicles can be the predominant goods vehicle on the road network at certain times of day, or can significantly add to road congestion. Issues associated with the transportation of minerals by road are frequently one of the main causes for community concern in relation to minerals development; however alternative modes of transportation (rail or barge) frequently prove to be unviable.

1.3.2. This reliance on distribution of aggregates by road has increased further recently with the closure of the wharf at Whitwood (Wakefield) which previously imported sand and gravel by barge from the Trent. However an application for the development of a further new aggregate wharf at Haigh Park Road, Sourton, was approved by Leeds City Council on 02 April 2015. This new wharf is expected to distribute approximately 2,000 tonnes per week of aggregate (sand and gravel) arriving from the Humber Ports.

1.3.3. 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. It is also understood that it is planned to bring in cement by rail to the Construction Materials plant at Bretton Street in Dewsbury

1.3.4. In recognition of the importance of maintaining existing minerals transportation infrastructure and promoting any further opportunities to move minerals off public roads, the aspiration within the Leeds Natural Resources and Waste Local Plan was to safeguard all existing and

potential rail sidings and several existing and potential wharf sites. However, following legal challenge, the relevant safeguarding policies are currently being re-examined and therefore it is premature to confirm that these safeguarding policies are currently in place.

1.3.5. Additionally proposed policy TR6: Freight, within Bradford's Local Plan Core Strategy, which has recently been submitted to the Secretary of State for Examination, sets a commitment to: *Encourage the protection of rail connected land for future uses that require rail freight use and seek to encourage the development of intermodal interchanges and improvements to multi-modal transfer facilitie*s. There are no wharf or rail siding safeguarding policies in place in any other local authority within West Yorkshire.

1.4. National Parks and Areas of Natural Beauty

1.4.1. The NPPF indicates that there is a need to progressively reduce quarrying in national parks, implying a consequent need for increasing aggregate extraction outside of national parks, if current supply levels are to be maintained. The West Yorkshire sub-region does not include a significant amount of national park land, other than a slight overlap of the Peak District National Park into the far southern periphery of Kirklees. However this small area of National Park within West Yorkshire contains no active minerals extraction sites.

1.4.2. Nonetheless it is known that West Yorkshire does receive significant quantities of high specification crushed rock aggregate from quarries within the Yorkshire Dales National Park (YDNP) and Nidderdale Area of Natural Beauty (AONB), some of which is transported into Leeds by rail. Table 15 provides an estimate that 453,250 tonnes of the crushed rock supplied into the Yorkshire and Humber Region from the Yorkshire Dales is consumed within West Yorkshire. Further information on how this estimate has been derived is set out at Appendix 2.

1.4.3. Very significant reserves exist in the YDNP capable of continuing to supply markets at existing rates for many years. However, in recognition of the government's aspiration to move minerals extraction away from the National Parks, no apportionment has been set within the North Yorkshire LAA to continue this supply of crushed rock aggregates from the Yorkshire Dales into the future.

1.4.4. In the longer term alternative resources may therefore be required and, if a new resource is not identified, this would have implications for the maintenance of supply of high specification aggregates. The aggregate from the National Park is of a quality which cannot be produced within West Yorkshire. This issue is discussed further in section 1.6 below.

1.5. West Yorkshire Local Plans

1.5.1. The LAA should be one of the key pieces of evidence underlying policies relevant to the supply and safeguarding of minerals within Local Plans. All five West Yorkshire Local Authorities are independently responsible for minerals planning within their respective administrative areas.

1.5.2. The five West Yorkshire authorities are at different stages of plan making with only Leeds and Wakefield having up-to-date Local Plan documents relevant to minerals planning in place and Bradford, Calderdale and Kirklees largely relying on saved Unitary Development Plan Policies. Having a robust Local Aggregates assessment in place is a pre-requisite to achieving sound minerals planning policies and to support the monitoring and updating of adopted plans.

1.5.3. Minerals policies within Local Plans are relevant to the Local Aggregates Assessment in so far as it should be acknowledged that identified minerals resources are unlikely to be released for extraction if Local Plan policies are in place which effectively restrict further extraction of that resource.

1.5.4. The only identified relevant restrictive policy is policy MINERALS 6 in the Leeds Natural Resources and Waste Local Plan adopted on 16th January 2013. This policy states that 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. Therefore it is acknowledged that the sand and gravel resource mapped by the BGS within this area is unlikely to be released for extraction within the Leeds Local Plan period.

1.6. Other Relevant Local Aggregate Assessments

1.6.1. West Yorkshire has historically been reliant on aggregates imported from adjoining areas to fulfil its construction needs and therefore security of the supply patterns which fulfil West Yorkshire demand is a key issue relevant to West Yorkshire LAA. This section will therefore summarise the findings of the LAAs produced by Mineral Planning Authorities supplying aggregate into West Yorkshire.

1.6.2. The two most significant LAAs, in terms of the quantity of minerals supplied into West Yorkshire, are the LAAs relating to the Derbyshire and North Yorkshire Geographical areas and associated National Parks. The Derbyshire, Derby and Peak District National Park LAA 2014 (DDPDLAA) broadly sets a future supply figure for crushed rock aggregates based on historic average sales levels; however with an adjustment intended to gradually reduce the proportion of aggregates produced within the Peak District National Park (PDNP).

1.6.3. Specifically the DDPDLAA reduces the future aggregate provision apportionment to the PDNP by 10%, relative to the 10 year sales average, 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 DDPDLAA specifically commits to maintaining aggregate production at a level which meets the demand from other regions, stating:

1.6.4. '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.'

1.6.5. The North Yorkshire Sub-region LAA (NYLAA) takes an alternative approach to future aggregate apportionments in relation to National Parks. A significant proportion of the crushed rock aggregate derived from the sub-region, particularly in terms of High Specification Aggregates (HSA), has historically been sourced from the Yorkshire Dales National Park (YDNP). The most recent statistics, included in the NYLAA first review document, February 2015, indicate that 49% of the 5.7 million tonnes of crushed rock aggregates produced in the North-Yorkshire sub-region in 2013 were extracted within the YDNP.

1.6.6. In response to the NPPF aspiration to progressively move aggregate production away from National Parks, the NYLAA does not make any apportionment whatsoever for future aggregate provision from within the YDNP. The most recent estimate is that approximately 450,000 tonnes of crushed rock aggregate extraction from the YDNP is consumed within West Yorkshire and therefore the NYLAA's omission of a future aggregate supply apportionment for the YDNP, with no commensurate adjustment to the future aggregate supply apportionment to areas outside of the National Parks, is very significant in relation to the security of supply of aggregates to West Yorkshire in the longer term. The North Yorkshire sub-region outside the YDNP is not in a position to make up any longer term shortfall in HSA, as suitable resources do not exist.

1.6.7. Nevertheless it should be noted that the NYLAA does advise 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 provision within the NYLAA to either maintain aggregate supplies from the YDNP, or compensate for a reduction in these supplies with an equivalent increase in apportionments elsewhere within North Yorkshire, is a significant short/ medium term threat to the future continuity of crushed rock aggregate supplies to West Yorkshire.

1.6.8. However, notwithstanding the substantial landbank of crushed rock within the Yorkshire Dales, the Minerals Products Association have advised that they believe the reserves of aggregate which would meet the definition of HSA are very limited. The NYLAA acknowledges that 'Unless new permissions are granted, and if recent levels of sales are maintained, there is potential for reserves of high PSV aggregate in the Yorkshire Dales National Park to be significantly reduced in the mid term.' A lack of support for the release of further reserves of High Specification Aggregates within the National Park associated with the landbank calculation approach taken in the NYLAA may therefore pose a mid term threat to the security of supply of HSA into West Yorkshire.

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

1.6.10. 'The scale of the shortfall (17mt) 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 20.9mt of reserves. If all are permitted, the reserves in these applications would eliminate the identified overall shortfall to 2030. NYCC resolved in 2014 to grant permission for one of these applications (an extension to Marfield Quarry, containing an estimated 4mt), subject to completion of a legal agreement but this new reserve is not reflected in the reserve and landbank figures presented in this LAA, which presents the position as at the end of 2013.'

1.6.11. 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 is present in quantities capable of continuing to supply a significant proportion of West Yorkshire's sand and gravel needs into the future, subject to environmental acceptability.

1.6.12. In order to take account of the impact of the economic downturn on the 10 year sales average and allow aggregate supply levels to return to a level where they could provide the raw materials necessary to deliver planned housing growth in the market area supplied by North Yorkshire's minerals, the NYLAA first review departs from the previous approach of calculating landbanks based upon 10 year sales averages and instead adjusts these figures up based upon estimates of the increase in sand, gravel and crushed rock supplies which will be necessary to step up housing delivery to planned levels.

1.6.13. The approach to forecasting sand and gravel demand contained in the NYLAA makes specific allowance for potential increased demand from West Yorkshire as a result of supply constraints within West Yorkshire. Consequently the NYLAA calculates future provision for sand and gravel at an overall annual rate equivalent to 2.62mt and for crushed rock at an annual rate of 3.75mt for the period 2014 to 2030. These figures are around 25% and 16% higher respectively than that derived using 10 year average sales, excluding sales of crushed rock from the YDNP.

1.6.14. 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.

1.6.15. Conversely the draft South Yorkshire 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.

1.7. National & Regional Guidelines for Aggregate Provision

1.7.1. The Government publishes guidelines for aggregate provision in England covering 16 year periods which are essentially intended to predict the amount of aggregate required to be produced over a given period to allow industrial needs to continue to be met, taking account of growth factors and also of targets for the use of recycled aggregate.

1.7.2. The most recent of these guidelines was published in June 2009 as, *National and regional guidelines for aggregates provision in England 2005-2020*. The guideline aggregate production figures for the English Regions of the 2005-2020 period are as set out in the table below:

TAB1 - National and regional guidelines for aggregates provision in England 2005-2020

New Regions	Guidelines for land-won production		Assumptions		
	Land–won Sand & Gravel	Land-won Crushed Rock	Marine Sand & Gravel	Alterna-tive Materials	Net Imports to England
South East England	195	25	121	130	31
London	18	0	72	95	12
East of England	236	8	14	117	7
East Midlands	174	500	0	110	0
West Midlands	165	82	0	100	23
South West	85	412	12	142	5
North West	52	154	15	117	55
Yorkshire & the Humber	78	212	5	133	3
North East	24	99	20	50	0
England	**1028**	**1492**	**259**	**993**	**136**

1.7.3. The national guidelines document indicates the above regional figures should be broken down further to sub-regional Mineral Planning Authority areas by regional planning bodies. However the regional planning body relevant to West Yorkshire, the Yorkshire and Humber Assembly, was dissolved in 2011 prior to an apportionment of the 2005-2020 guideline figures having been made.

1.7.4. The Regional Planning Body had used a simple methodology for sub-regionally apportioning the predecessors to the 2005-2020 aggregate guideline figures, based upon average sales figures for aggregates from each sub-region over the period 1997-2001, adjusted to provide for the level of output necessary to meet the regional apportionment. This apportionment method resulted in West Yorkshire being apportioned to supply 0.34 million tonnes of sand and gravel per year (7.5% of the Regional total) and 1.1 million tonnes of crushed rock aggregate per year (8% of the Regional total).

1.7.5. The Regional Planning Body delayed their sub-regional apportionment of the 2005-2020 guideline figures, pending a review of whether the apportionment methodology could be adjusted to provide for a more sustainable spatial distribution of aggregate extraction sites (increasing the apportionments to West and South Yorkshire). To this end a series of three reports were published between 2004 and 2009; however unfortunately the Yorkshire and Humber Assembly was dissolved before the review process could be completed and an apportionment methodology for the 2005-2020 guideline figures was never agreed.

1.7.6. Therefore, instead of calculating landbanks based upon an apportionment of the national and regional guideline figure, the Yorkshire and Humber Region Aggregates Working Annual Monitoring Report for 2009, published in 2011, opted to calculate aggregate landbanks based upon 7 year average sales figures. Furthermore, due to the low level of output from West Yorkshire, average 7 year sales

figures for sand and gravel from the sub-region could not be disclosed for commercial confidentiality reasons, therefore no separate landbank for West Yorkshire sand and gravel was included in the 2009 annual monitoring report.

1.7.7. Although no formal sub-regional apportionment of the 2005-2020 guideline figures has been undertaken, it is worth noting that regional sand and gravel supply apportionment was increased by 7% from the 2001-2016 apportionment. Whereas the 2005-2020 crushed rock apportionment figure for the Yorkshire and Humber Region represents a reduction in 4% from the 2001-2016 figure.

1.7.8. It should also be noted that, if the same apportionment methodology had been applied to the 2005-2020 figures had been previously used for the 2001-2016 figures, based upon historic 7 year sales figures, the West Yorkshire apportionment for crushed rock would have been 1.17 million tonnes and the combined sand and gravel apportionment for West and South Yorkshire would have been 0.65 million tonnes. Table TAB2 below summarises the figures discussed above:

TAB2 – Theoretical West Yorkshire Apportionment of 2005-2020 Yorkshire & Humber Aggregate Guideline Figures, Based Upon 2003-2009 Annual Sales Averages

Note: All figures in millions of tonnes	Sub-regional Apportionment of 2001-2016 Regional Guideline Figure	Average Sales (2003 - 2009)	Proportion of Total Yorkshire and Humber Sales	Sub-regional Apportionment of 2005-2020 Guideline Figures (based on 2003-2009 sales averages)
Sand and Gravel (West & South Yorkshire)	1.16	0.55	13%	0.65
Crushed Rock (West Yorkshire Only)	1.11	0.96	9%	1.17

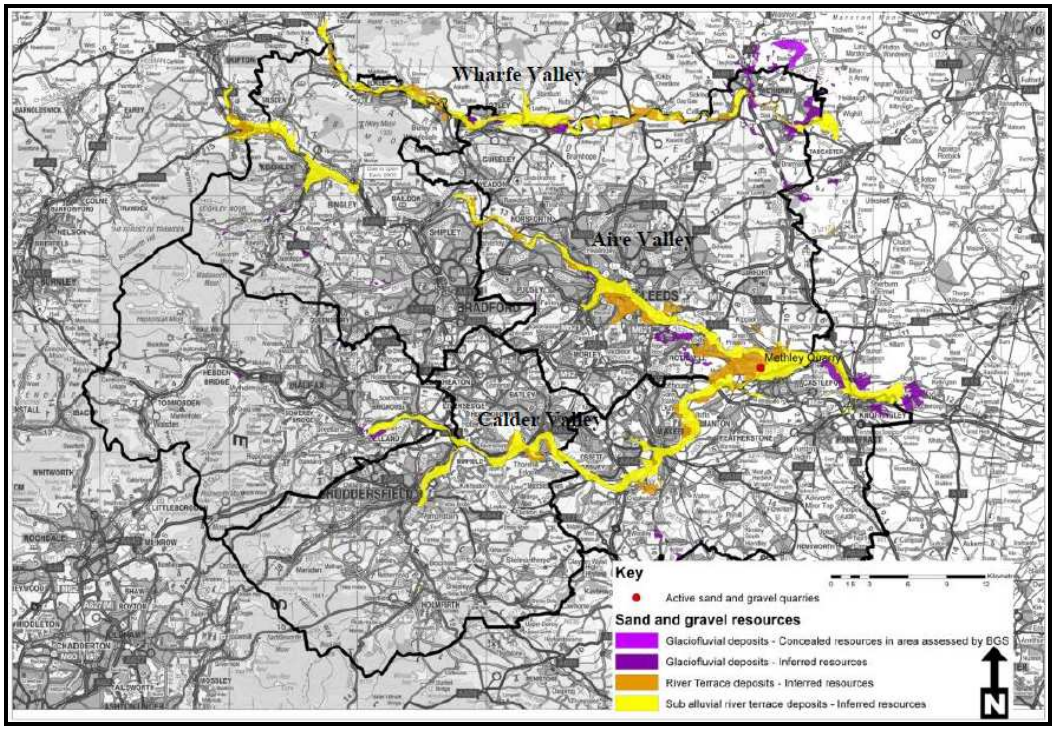
2. MINERAL RESOURCES

2.1. Sand and Gravel

2.1.1. River Terrace sand and gravel deposits are present along the river valleys of the Aire, Calder and Wharfe and some tributaries, as shown in yellow on FIG1 below. 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.

2.1.2. Small localised glaciofluvial deposits are also present in many areas, as shown in purple on FIG1 below. 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 glaciofluvial sand and gravel resources could be viably extracted.

FIG1 – West Yorkshire Sand & Gravel Resource



Source: BGS, 2009. West Yorkshire sand and gravel resources: Investigating the potential for an increased sub-regional apportionment.

2.1.3. As discussed in the preceding section, the Yorkshire and Humber Regional Assembly had previously considered significantly increasing West Yorkshire's sand and gravel apportionment, based upon the findings of a report which they had commissioned in 2007 by Land Use Consultants entitled *Phase 2 Sand and Gravel Study for Yorkshire and Humber Appraisal of Apportionment Options*.

2.1.4. This 2007 study broadly calculated the volume of unconstrained sand and gravel resources occurring within the West Yorkshire region. The estimate was calculated using the mapped BGS sand and gravel information for West Yorkshire produced during the Phase 1 study (as shown on FIG1) which was used to calculate the total surface area for sand and gravel resources within West Yorkshire.

2.1.5. Resources that fell within urban areas as defined by the Office of National Statistics urban area dataset was then removed and the remaining area of unconstrained unsterilised resources was calculated. Using this area of unsterilised resources for West Yorkshire, a two-metre average resource thickness and a density of 1.75t/m3 was applied to obtain an estimate of 147 million tonnes of unsterilised resource. This was quoted as the minimum volume of resources, and if a thickness of 10m was assumed then the volume would be 735.3 million tonnes.

2.1.6. However it is now widely accepted that this was a very significant overestimate of the amount of sand and gravel remaining within West Yorkshire which is likely to be viable for extraction. This conclusion is supported by later BGS research in the form of the 2009 study: *West Yorkshire sand and gravel resources: Investigating the potential for an increased sub-regional apportionment*.

2.1.7. This 2009 BGS study was informed by a minerals industry consultation exercise and reported the following key findings:

- The industry estimate that the amount of potentially viable sand and gravel within West Yorkshire, is between 90 – 96% lower than was estimated in the phase II study.

- Only sites containing 1-1.5 million tonnes of sand and gravel (taking up 10-25ha of land) would be likely to be economically viable. Much of the potentially viable sand and gravel resource within West Yorkshire is divided by rivers, canals, railways and roads therefore there are only likely to be a very small number of viable sites.

- The Wharfe Valley is considered to have some of the largest areas of unworked high quality sand and gravel in the region; however the industry regard it as unviable for new extraction sites due to the proximity of landscape/ environmental designations coupled with the potential for relatively strong opposition from local communities.

- The industry have identified 5-10 potential sites for sand and gravel extraction within West Yorkshire; however issues relating to access, environmental, hydrological, and/or planning restrictions are considered too problematic relative to the volumes and quality of reserves to merit developing any of them.

2.1.8. The picture of low sand and gravel West Yorkshire resource viability depicted above appears to be being borne out by the current relatively rapid contraction of the sand and gravel extraction industry within West Yorkshire, with the only extraction site which had previously remained in Leeds, at Methley, being worked out in Summer 2013 and no apparent interest in any renewed extraction in Leeds, Bradford, Wakefield or Calderdale.

2.1.9. West Yorkshire's remaining extraction industry is now limited to one relatively small site in the District of Kirklees. There are currently fewer productive sites than at any time since 1986 and annual output is at a recorded low.

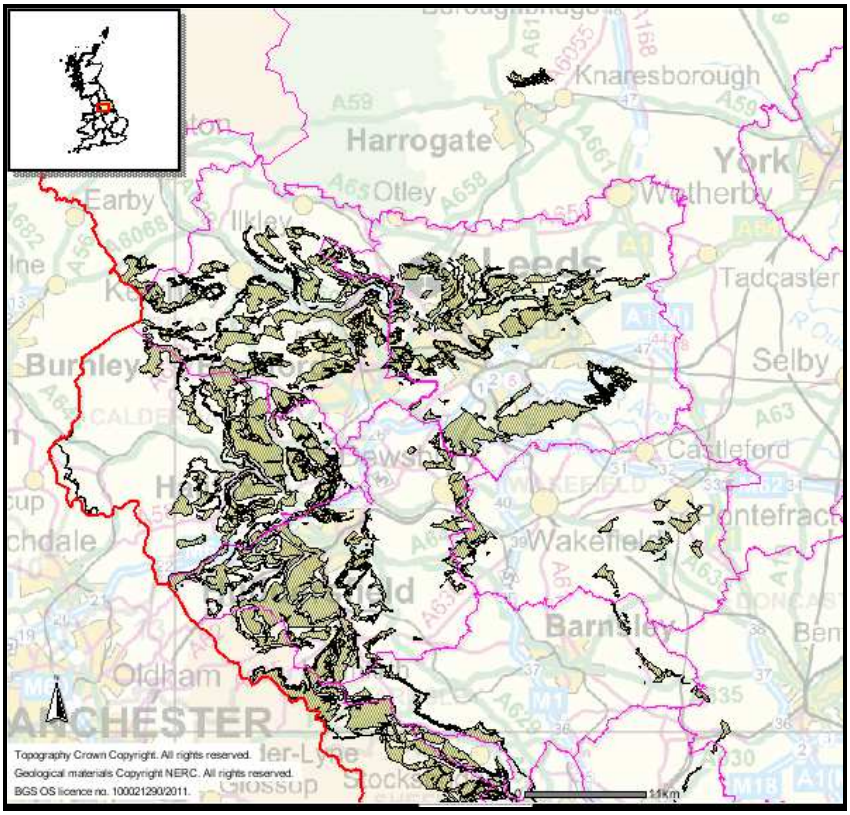
2.2. Sandstone Aggregate

2.2.1. 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, and as such can be regarded as strategically important, in terms of the availability of aggregate resources within West Yorkshire. There are no sandstone aggregate sources in Wakefield.

2.2.2. The sandstones are too weak and porous for the manufacture of concrete or for road building and are commonly used in low specification situations and for bulk fill. However, where investment is made in appropriate processing plant, these materials can make an important contribution and can be used to produce building sand, as well as a washed sand suitable for use in concrete products. These materials are used in large quantities in the manufacture of concrete walling and paving blocks at factories in Calderdale.

2.2.3. 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.

FIG2 – West Yorkshire Sandstone Resource



Source: BGS, 2015. Minerals Information Online
Available at: http://www.bgs.ac.uk/mineralsuk/maps/maps.html

2.3. Building Sandstone

2.3.1. 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 of the building stone quarried in West Yorkshire is of a high quality, particularly paving products which are of national importance, 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.

2.3.2. At many sites the wastage from the extraction of blocks and from sawing is crushed for aggregate/ bulk fill. Although production of crushed rock aggregates at building stone quarries is usually undertaken on an irregular basis, the annual tonnage of aggregates produced can exceed the weight of the higher value building stones. It is also notable that sandstone is crushed down to building sand at several West Yorkshire quarries, a product which can be used as a good quality alternative to sand derived from sand/ gravel pits. Many quarries have closed since 1986 and the number of active quarry sites has significantly reduced; however several of the remaining quarries have been enlarged, with their activities/ output intensifying.

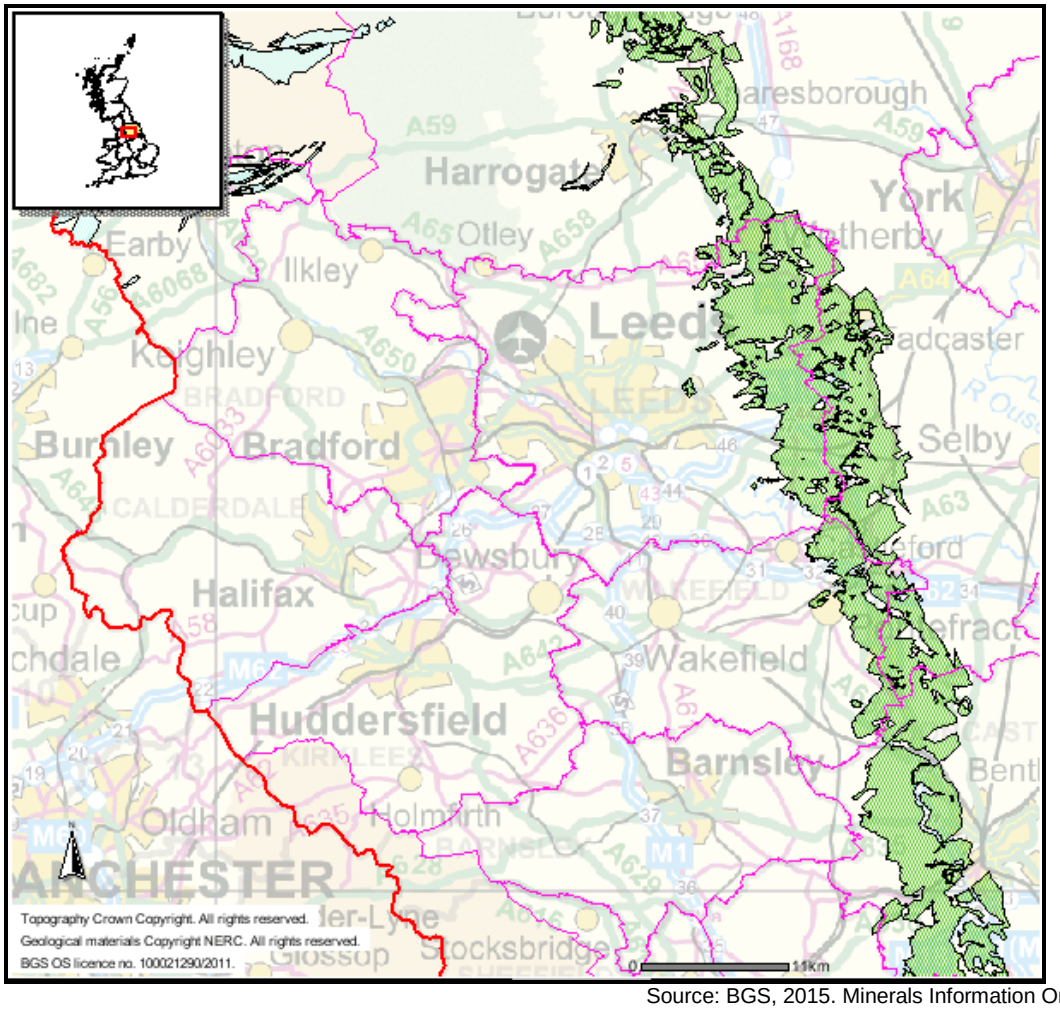
2.4. Limestone Aggregate

2.4.1. 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 Upper Magnesian Limestone could be used for higher quality uses.

2.4.2. 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 (C 10 mt reserve) has been implemented near Knottingley. Two quarries have closed since 1986.

2.4.3. Given the specific considerations associated with Magnesian Limestone and the small number of sties it is proposed to produce a specific resource assessment paper covering this resource in discussion with the relevant Mineral Planning Authorities in North and South Yorkshire. This will allow further consideration to be given on the current state of the Magnesian Limestone quarrying industry and any short-medium or long term supply issues to be identified.

FIG3 – West Yorkshire Limestone Resource



Source: BGS, 2015. Minerals Information Online
Available at: http://www.bgs.ac.uk/mineralsuk/maps/maps.html

2.5. Building Limestone

2.5.1. 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.

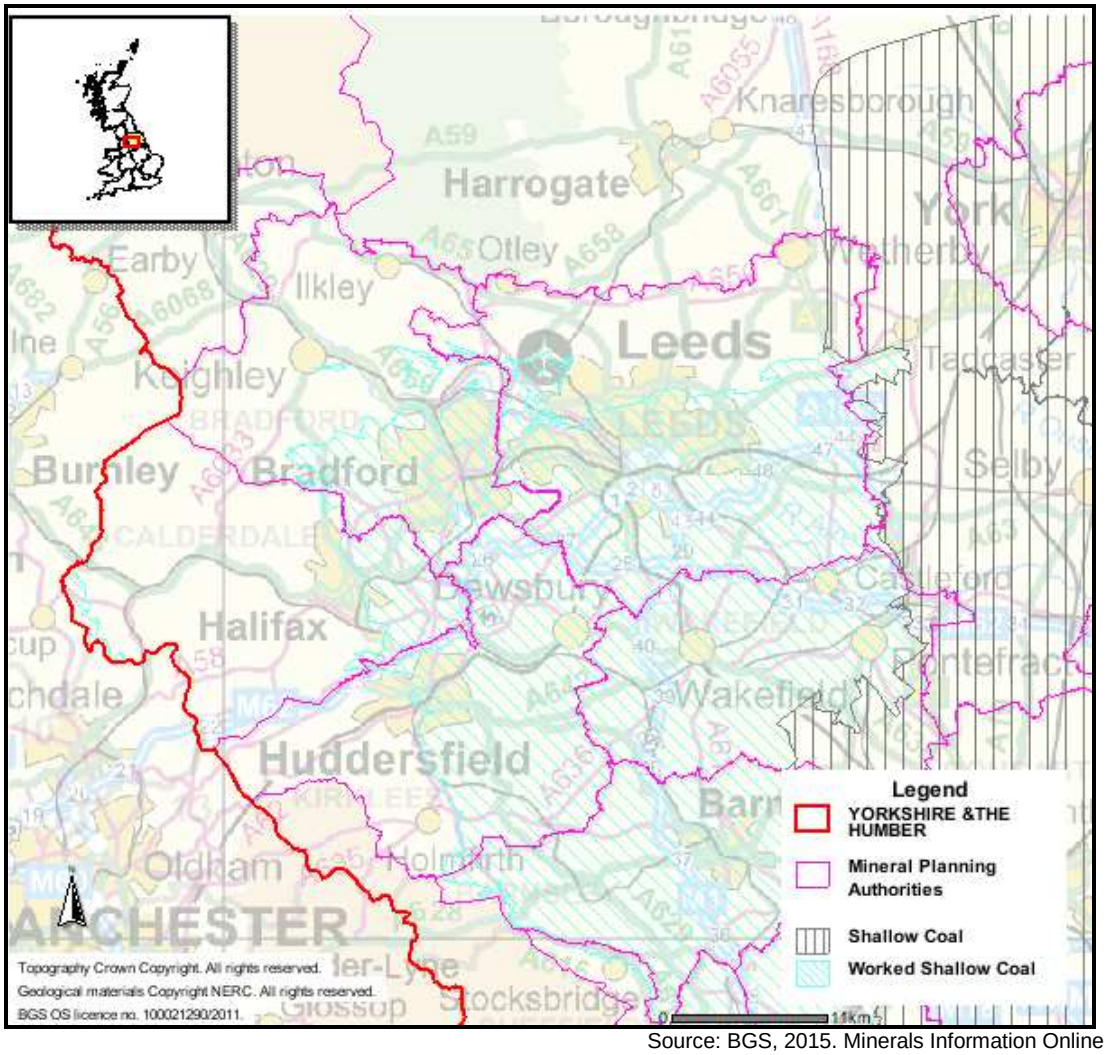
2.6. Coal

2.6.1. Deep mining: 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, although this mine is due close in December 2015. The small mine at Hay Royds Clayton West has now shut. The New Crofton Co-op Colliery project proposes to open a new drift coal mine just to the south of New Crofton. The mine will be owned and operated by a workers' Co-operative, New Crofton Co-op Colliery Limited. Planning permission was granted by the planning and highways committee on the 19th of June 2014. Coal mining is not a source of aggregate. Spoil can be used as bulk fill in some load bearing situations.

2.6.2. It should be noted that the New Crofton drift mine will not be producing until 2016 earliest and also that it is unlikely to produce any significant quantities of spoil, as the mining method involves backstowing of any spoil within the mine. However colliery spoil sourced from spoil tips has been used historically to provide bulk fill materials for civils projects, e.g. Prince of Wales Colliery for the M62/A1 construction improvements. Some potential areas of spoil are thought to remain which would be suitable sources of fill material for major infrastructure projects.

2.6.3. Opencast mining: 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.

FIG4 – West Coal Resource



Source: BGS, 2015. Minerals Information Online
Available at: http://www.bgs.ac.uk/mineralsuk/maps/maps.html

3. AGGREGATE RESERVES AND SALES

3.1. Sand & Gravel Reserves

3.1.1. Mineral resources are minerals thought to be present within given geographical areas which available geological evidence suggests may be of a quantity and quality which would be of economic interest. The sand and gravel resources within West Yorkshire 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).

3.1.2. Resources allocated for future extraction are minerals resources which have been identified within Local Plans as being potentially suitable for extraction within the relevant Plan Period. However release of these resources for extraction is subject to planning permission being obtained and any relevant environmental or access issues being addressed and therefore allocated resources are not considered to constitute mineral reserves for the purposes of the LAA.

3.1.3. For information purposes Table 3 below indicates the extent of sand and gravel site allocations within West Yorkshire. The figure for potential total reserves is a rough estimate based upon certain broad assumptions about the extent, depth and quantity of the sand and gravel resource within the allocated sites/ areas. The release of the allocated resource for extraction would depend upon the resource being deemed to be commercially viable by the extractive industry and an environmentally acceptable planning application achieving approval.

TAB3 – West Yorkshire Sand & Gravel Allocations

Site	**Type of Allocation**
Midgley Farm, Otley	Allocated Site
Mickletown, Leeds	Extensive Area of Search
Dewsbury, Mirfield and Bradley	Allocated Sites
Dewsbury	Limited Area of Search
Foxholes North of Altofts	Allocated Site
Penbank, Castleford	Allocated Site
The Wyke, Horbury	Allocated Site
Stanley Ferry, Wakefield	Allocated Site
Potential Total Reserve	C. 7.5 Million tonnes

3.1.4. Mineral reserves are resources which have been granted planning permission for extraction. Certain old minerals planning permissions have been registered as dormant and therefore the reserves which these permissions cover could not be worked without further permissions being obtained.

3.1.5. Reserves at dormant minerals sites normally form part of the BGS standard landbank calculation methodology. However, given the low level of sand and gravel reserves and output, it is considered that the inclusion of dormant reserves would lead to the calculation of a misleading inflated landbank figure within West Yorkshire. Therefore reserves at dormant sand and gravel pits have not been treated as permitted reserves for the purposes of calculating the West Yorkshire sand and gravel landbank.

3.1.6. As of 31 December 2014 only one site remains within West Yorkshire with permitted reserves of sand and gravel. This site is a relatively small site located within Kirklees which began production in late 2014. The only remaining sand and gravel extraction site located within the District of Leeds closed in July 2013 and no permitted reserves of sand and gravel now remain within Leeds.

3.1.7. The previous application to reactivate a dormant sand and gravel site within Wakefield was withdrawn some years ago. Although BGS mapping indicates that limited sand and gravel resources may remain within Calderdale and Bradford, no permitted reserves are present within either of these two Districts. The total West Yorkshire reserve of Sand and Gravel as of 31 December 2014 was 0.88 million tonnes.

3.1.8. Table 4 below sets out regional level sand and gravel reserves data, with West and South Yorkshire amalgamated for confidentiality reasons, as presented within the Yorkshire and Humber Aggregate Working Party Report 2014. It is notable that South and West Yorkshire Sand & Gravel reserves declined by 58% over the 10 year period 2004-2013 and that West Yorkshire reserves made up only 15% of the South and West Yorkshire combined total in 2013.

TAB4 – Yorkshire & Humber Sand and Gravel Reserves 2004-2013

Sub-region	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
North Yorkshire	28.04	24.29	22.85	20.65	20.02	18.4	17.98	16.24	19.1	18.63
South and West Yorkshire	14.3	10.5	10.3	10.14	10.0	5.33	5.95	5.99	5.81	5.95
East Riding and North Lincolnshire	~	~	~	~	~	14.4	14.2	16.5	15.8	19.9
Total Yorkshire and Humber	**42.34**	**34.79**	**33.15**	**30.79**	**30.02**	**38.13**	**38.13**	**38.73**	**40.71**	**44.48**

3.2. Sand & Gravel Sales

3.2.1. 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. During the 2014 only 1 sand and gravel extraction site was operational within West Yorkshire.

3.2.2. Table 5 below sets out regional level sand and gravel sales data, with West and South Yorkshire amalgamated for confidentiality reasons, as presented within the Yorkshire and Humber Aggregate Working Party Annual Monitoring Report 2014.

TAB5 – Yorkshire & Humber Sand and Gravel Sales 2004-2013

Sub-region	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
North Yorkshire	2.8	2.8	2.7	2.7	2.3	1.7	1.6	1.7	1.6	1.5
South and West Yorkshire	0.6	0.5	0.5	0.4	0.4	0.5	0.26	0.24	0.24	0.18
East Riding and North Lincolnshire	1.1	1.1	1.2	1.3	1.13	1.0	0.7	0.5	0.7	0.83
Total Yorkshire and Humber	**4.5**	**4.4**	**4.4**	**4.4**	**3.83**	**3.2**	**2.56**	**2.44**	**2.54**	**2.51**

Source: Yorkshire and Humber Aggregate Working Party Annual Monitoring Report 2014

3.2.3. It is notable that West and South Yorkshire sales of Sand and Gravel declined by 70% over the 10 year period 2004-2013. Furthermore total Yorkshire and Humber sales, which appear to have stabilised at approximately 2.5 million tonnes, following a rapid decline between 2007 and 2010, now represents only 51% of the 4.9 million tonne annual Yorkshire and Humber aggregate provision guideline figure calculated by the government to be necessary to maintain adequate aggregate supplies in 2009.

3.2.4. The West and South Yorkshire 10 year sand and gravel sales average stood at 0.38 million tonnes in 2013. With reserves as of 31 December 2013 at 5.95 million tonnes the landbank of sand and gravel within West & South Yorkshire, based on 10 year average sales levels, therefore stood at 15 years and 8 months.

3.2.5. The first West Yorkshire LAA, based on 2012 data, further refined the combined West and South Yorkshire landbank calculation by calculating a 2012 West Yorkshire sales figure from direct operator reporting and separating out 2004-2011 combined sales data using a % proxy (based upon the proportion of 2012 combined sales produced within West Yorkshire). Table 6 below shows the West Yorkshire figures calculated within the first LAA and includes a 2013 figure for West Yorkshire based upon direct reporting by the relevant Planning Authorities. The 2014 figure has been used to calculate the 10 year sales average but has been obscured within the table for commercial confidentiality reasons.

TAB6 – West Yorkshire Sand and Gravel Sales 2005-2014

Note: All Figures in Million Tonnes	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Ten Year Average
W Yorks	0.17	0.12	0.12	0.12	0.12	0.12	0.08	0.07	0.05	-	**0.10**

3.2.6. Based upon the above figures a West Yorkshire 10 year annual average sand & gravel sales figure of 0.10 million tonnes can be calculated. As stated in paragraph 3.1.6 above, West Yorkshire sand and gravel reserves, as of 31 December 2014 were 0.88 million tonnes and therefore the landbank of sand and gravel within West Yorkshire, based on 10 year average sales levels, can be calculated as being:

8 years and 10 months

3.2.7. The above landbank figure represents an increase of 1 year and 11 months from the landbank figure calculated in the West Yorkshire LAA for the 2013 period of 6 years and 11 months; however this increase is explained by a continuing decline in sales rather than any increase in permitted reserves (permitted reserves have in fact declined marginally between 2013 and 2014). Other information relevant to setting a future annual sand and gravel target sales figure and deriving a more appropriate landbank are assessed in Section 4 below.

3.3. Crushed Rock Reserves

3.3.1. Minerals resources within West Yorkshire capable of producing crushed rock aggregates include the Carboniferous Sandstones found throughout a large proportion of West Yorkshire, but particularly prevalent in the administrative Districts of Bradford, Calderdale and Kirklees, and the Dolomitic (Magnesian) Limestones found in a strip running along the eastern boundaries of the Districts of both Leeds and Wakefield.

3.3.2. The characteristics of these resources are described further in Section 2 above; however it is worth reiterating that "In general, the Carboniferous sandstones in Yorkshire are too weak and porous and susceptible to frost damage for them to be used for good quality roadstone or concrete aggregate"[1]. Nonetheless it is possible to utilise the sand which can be produced by crushing down Carboniferous Sandstones as a building and concreting sand and large quantities are incorporated into artificial stone paving and walling products.

[1] British Geological Survey, 1996. *A geological Background for Planning and Development in the City of Bradford Metropolitan District, Volume 2: A Technical Guide to Ground Conditions.* BGS: Nottingham, page 37.

3.3.3. It should also be noted that the production of 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.

3.3.4. As of 31 December 2014 39 quarries existed within West Yorkshire which either actively produce or have in the past produced crushed sandstone or limestone aggregates (see Appendix 1). Crushed rock aggregate is produced in all five West Yorkshire districts, sometimes in significant quantities, but more frequently in small quantities as a by-product of building stone quarrying. At some quarry sites especially in Calderdale and Bradford the amount of aggregate product is insignificant.

3.3.5. Conversely Dolomitic Limestone aggregate is currently only actively produced in Wakefield, at 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. The total West Yorkshire reserve of Crushed Rock Aggregate as of 31 December 2014 is estimated to have been 25.7 million tonnes.

3.3.6. Table 7 below sets out regional level crushed rock aggregate reserve data for the 2005-2013 period. Figures for 2005-2009 are taken from the RAWP Annual Monitoring Reports, figures from 2010-2013 are taken from the AWP Annual Monitoring Reports, other than the West Yorkshire Figures for 2012 and 2013 which have been calculated using figures directly reported by West Yorkshire Mineral Planning Authorities. Table 8 provides the West Yorkshire reserve figures for the period 2005-2014.

3.3.7. In relation to the West Yorkshire figures for 2012, 2013 and 2014 it should be noted that, 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 un-worked 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.

3.3.8. Consequently it should be noted that 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 un-worked, reserve, the proportion which will be reject material and the amount of the reject material which can be crushed and sold. The majority of the apparent reserve reduction between 2013 and 2014 is due to a reappraisal of the proportion of sandstone reserves at building stone quarries in Bradford and Calderdale which are likely to be used for aggregates. It

should also be noted that several highly productive crushed rock quarries with large reserves dominate the totals.

TAB7 – Yorkshire & Humber Crushed Rock Reserves 2005-2013

Note: All Figures in Million Tonnes	2005	2006	2007	2008	2009	2010	2011	2012	2013
W Yorks	42.8	41.8	40.8	40	27.1	15.7	15.4	28.5	30.4
NYCC	108.3	105.2	101.1	100.5	103.9	101	97.7	102.6	104.4
Yorks Dales	131.8	128	124	120.2	106.2	103.6	104.5	89.2	85.4
S Yorks	65.1	62.8	60.8	58.8	63.4	62.4	61.2	60.8	59.5
E Yorks & Lincs	2.4	2.1	1.8	1.6	1.7	2.5	7.2	5.8	5.4
Total	**350.4**	**339.9**	**328.5**	**321.1**	**302.3**	**285.2**	**286**	**286.9**	**285.1**

Note: Figures taken from RAWP Annual Monitoring Reports 2005-2009 and AWP Monitoring Report 2013-2014; figures in orange are acknowledged to be incomplete

TAB8 – West Yorkshire Crushed Rock Reserves 2005-2014

Note: All Figures in Million Tonnes	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
W Yorks	42.8	41.8	40.8	40	27.1	15.7	15.4	28.5	30.4	25.7

Note: Figures for 2005-2009 taken from RAWP Annual Monitoring Reports; figures in orange are acknowledged to be incomplete

3.3.9. It is notable that overall Yorkshire and Humber Crushed Rock aggregate reserves declined by 19% over the nine year period 2005-2013. West Yorkshire reserves have declined more sharply than the regional average, with a 40% (17.1 million tonne) decline in reserves between 2005 and 2014.

3.3.10. However reserve levels within West Yorkshire appear to have been relatively stable since 2009, discounting the figures for 2010 and 2011 which were acknowledged by the AWP to be incomplete. West Yorkshire reserves made up only 11% of the total crushed rock aggregate reserve for the Yorkshire and Humber Region reported in 2013.

3.4. Crushed Rock Sales

3.4.1. Table 9 below sets out regional level crushed rock aggregate sales data for the 2004-2013 period. Figures for 2004-2009 are taken from the RAWP Annual Monitoring Reports, figures from 2010-2013 are taken from the AWP Annual Monitoring Reports, other than the West Yorkshire Figures for 2012 and 2013 which have been calculated using figures directly reported by West Yorkshire Mineral Planning Authorities. Table 10 provides 10 year West Yorkshire sales data for the 2005-2014 period.

TAB9 – Yorkshire & Humber Crushed Rock Sales 2004-2013

Note: All Figures in Million Tonnes	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Ten Year Average
W Yorks	1.20	1.20	1.10	1.10	0.90	0.90	0.53	0.43	0.79	0.78	**0.89**
NYCC	4.20	3.90	3.80	4.30	3.80	2.60	2.90	1.90	2.70	2.80	**3.29**
Yorks Dales	3.80	4.00	3.90	4.00	3.90	2.70	2.61	2.64	2.63	2.85	**3.30**
S Yorks	3.10	3.00	2.60	2.30	2.20	1.40	1.10	1.05	1.14	1.27	**1.92**
E Yorks & Lincs	0.30	0.40	0.30	0.30	0.20	0.10	0.20	0.30	0.31	0.25	**0.27**
Total	**12.60**	**12.50**	**11.70**	**12.00**	**11.00**	**7.70**	**7.34**	**6.32**	**7.57**	**7.95**	**9.67**

TAB10 – West Yorkshire Crushed Rock Sales 2005-2014

Note: All Figures in Million Tonnes	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Ten Year Average
W Yorks	1.20	1.10	1.10	0.90	0.90	0.53	0.43	0.79	0.78	1.03	**0.88**

3.4.2. It should be noted that, after remaining stable for a number of years at between 1.1 and 1.2 million tonnes per annum, sales of crushed rock aggregates from West Yorkshire declined relatively substantially between 2007 and 2011, before beginning to recover in 2012. The recovery of the West Yorkshire crushed rock aggregate quarrying industry appears to have continued into 2014, with sales returning to over 1 million tonnes for the first time in 6 years.

3.4.3. An overall significant decline in Yorkshire and Humber quarry output is also evident between 2007 and 2011, with total sales dropping by 47% over the 10 year period. However, similarly to the West Yorkshire trend, regional quarry output appears to have begun to recover in 2012-2013. No regional level data is yet available for 2014.

3.4.4. It is also worth noting that the 2013 total sales of crushed rock aggregates from the Yorkshire and Humber Region, at 7.95 million tonnes, are 40% below the 13.25 million tonne annual Yorkshire and Humber aggregate provision guideline figure calculated by the government to be necessary to maintain adequate aggregate supplies in 2009.

3.4.5. The West Yorkshire 10 year crushed rock aggregate sales average 2005-2014 stands at 0.88 million tonnes. With reserves as of 31 December 2014 at 25.7 million tonnes the landbank of crushed rock aggregates within West Yorkshire, based on 10 year average sales levels, can therefore be calculated as being:

29 years and 2 months

3.4.6. The above landbank figure represents a reduction of 5 years from the landbank figure calculated in the West Yorkshire LAA for the 2013 period of 34 years and 2 months. This reduction can mainly be explained by a reappraisal of quarry reserves in Bradford and Calderdale which has resulted in a substantial reduction in the sandstone aggregate reserves estimated to be remaining within those Districts.

3.4.7. In the case of the Bradford aggregate reserve estimate a more realistic approach has been taken to estimating the proportion of reserves which are likely to produce aggregate vs. building stone/ wastage. Therefore the new reserve estimate is likely to more accurately reflect true aggregate reserves. However a significant proportion of the West Yorkshire reserves are known to be tied up in old Building Stone quarries with low intensity/ intermittent working. Therefore parts of the apparent West Yorkshire crushed rock aggregate reserve may be unlikely to yield significant quantities of aggregate in the short/ mid-term.

3.4.8. Other information relevant to setting a future annual crushed rock target sales figure and deriving a more appropriate landbank is assessed in Section 4 below.

4. APPRAISAL OF OTHER RELEVANT INFORMATION

In addition to appraising aggregate reserve and sales data paragraph 145 of the National Planning Policy Framework makes it clear that Local Aggregate Assessments should consider other relevant local information, and include an assessment of all supply options (including marine dredged, secondary and recycled sources) before arriving at a landbank calculation methodology.

The National and Regional Guidelines for Aggregate Provision are also relevant; however it is not expected that the pre-existing system of regional and sub-regional apportionments will simply be rolled forward.

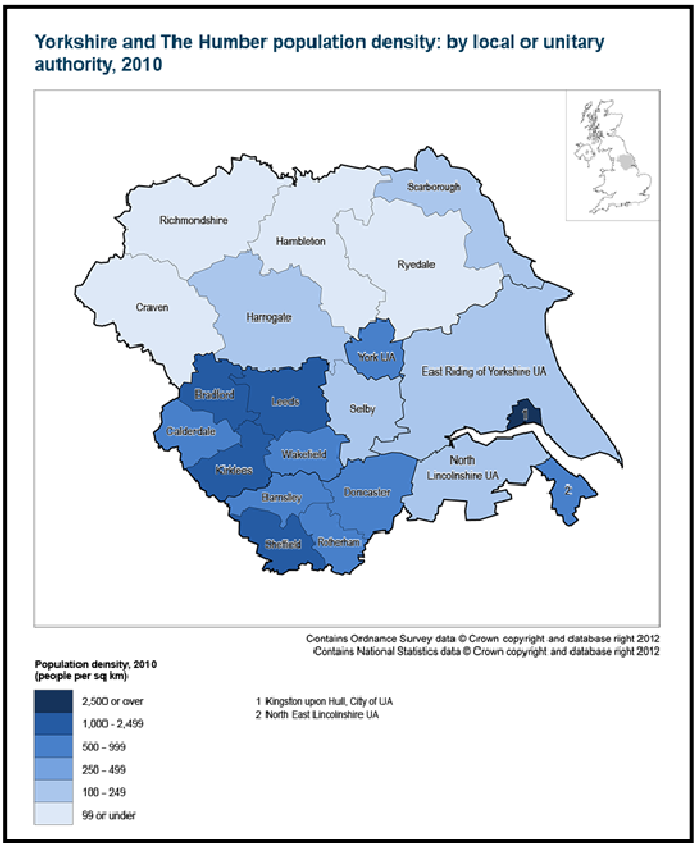
The following section sets out the other information which the West Yorkshire Mineral Planning Authorities considers to be relevant to the assessment of the minerals supply situation within West Yorkshire. This information has been used to inform the proposed landbank calculation methodology set out in Section 5.

4.1. Aggregate Flows to and from West Yorkshire

4.1.1. 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. Demand for aggregates is high, the nature of the geology limited, in terms of its ability to produce certain higher specification aggregates, and the accessibility of the remaining un-worked aggregate resource constrained.

4.1.2. Figure 5 below is a population density map produced by the Office of National Statistics which illustrates the high density of population in West Yorkshire relative to other parts of the Region.

FIG5



4.1.3. The lack of ability of West Yorkshire to meet its own aggregate needs is evidenced by tables 13 and 14 below, which provide figures indicating the proportion of aggregate consumption which is met by imports for the four sub-regions of Yorkshire and Humber. The figures set out in these tables are taken from the BGS/ CLG document 'Collation of the results of the 2009 aggregate minerals survey for England and Wales', other than the sales figure which is taken from the tables set out in Section 3 above.

TAB11 – Proportion of CR Consumption Met By Imports for Y&H Sub-regions

NB. Figures Relate to 2009 and are in thousands of tonnes	**Crushed Rock Sales**	**Crushed Rock Imports**	**Crushed Rock Consumption**	**% of Consumption Met by Imports**
Humber (East Riding, North Lincolnshire and North East)	100	592	789	**75%**
North Yorks, Yorkshire Dales and North York Moors National Parks	4,300	470	2,322	**20%**
South Yorkshire	1,400	1,068	2,106	**51%**
West Yorkshire	900	1,860	2,332	**80%**

TAB12 – Proportion of S&G Consumption Met By Imports for Y&H Sub-regions

NB. Figures Relate to 2009 and are in thousands of tonnes	**Sand & Gravel Sales**	**Sand & Gravel Imports**	**Sand & Gravel Consumption**	**% of Consumption Met by Imports**
Humber (East Riding, North Lincolnshire and North East)	1,000	287	743	**39%**
North Yorks, Yorkshire Dales and North York Moors National Parks	1,700	179	809	**22%**
South Yorkshire	380	415	719	**58%**
West Yorkshire	120	764	810	**94%**

4.1.4. The consumption figures included in the above tables are calculated using sales by destination data, including sales within the home region, imports from other regions and imports from outside England and Wales. It should be noted that the report cautions that the figure for total consumption slightly underestimates true consumption because for some regions unallocated sales have an unknown destination. Furthermore consumption figures are calculated from the principal destination of aggregate flows. Final sales, particularly for rail-borne aggregates, may be to other regions

4.1.5. Conversely, as described in more detail in the subsequent section, 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 Yorkshire is also consumed within West Yorkshire. They range from one producer saying 50% is sent out of the county to another saying none.

4.1.6. West Yorkshire 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.

4.1.7. In terms of where the 1.86 million tonnes of crushed rock and 760,000 tonnes of sand and gravel estimated to be imported to West Yorkshire comes from, available data is not comprehensive but a summary of the available data is as set out in table 13 below. Please note that the figures have been taken from various data sources, as set out in Appendix 2 and have been adjusted to add up to the total set out in the 2009 BGS Data collation Report (which is considered to provide the most robust data currently available on aggregate imports by sub-region.

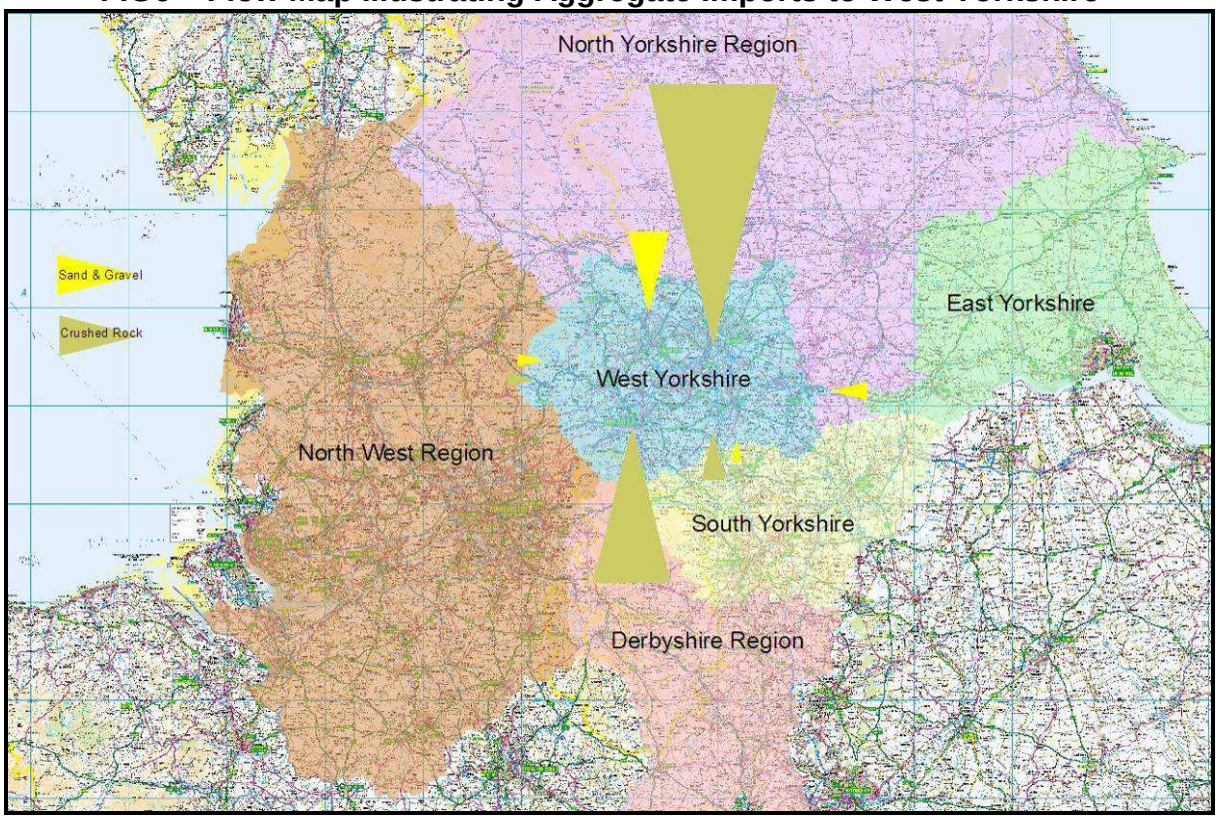
TAB13 – Estimated Origins of Aggregates Supplied Into West Yorkshire

Note: All figures in Tonnes and relate to 2009[2]	Annual Exports of Sand & Gravel to West Yorkshire	Annual Exports of Crushed Rock to West Yorkshire
North Yorkshire County Council	240,000	250,000
Yorkshire Dales	0	453,250
East Yorkshire	150,000	7,040
South Yorkshire	73,220	141,020
Derbyshire	3,880	478,384
North-West	69,510	79,161

[2] Given the economic climate at the time, 2009 is generally considered to have been an unusually low year in terms of aggregate sales and therefore the figures in this table, although useful as an indicator of the general spatial distribution of supplies of aggregates into West Yorkshire, may not be useful in terms of understanding the precise magnitude of imports of aggregates into West Yorkshire.

4.1.8. Figure 8 below illustrates this estimated spatial distribution of aggregates flows into West Yorkshire, with the size of the arrow indicating the relative quantity of aggregate estimated to flow from the producing area.

FIG6 – Flow Map Illustrating Aggregate Imports to West Yorkshire



4.1.9. The above information illustrates the almost complete reliance of West Yorkshire on the continued supply of aggregates produced outside of West Yorkshire to meet the needs of its dense urban population in terms of construction and other industrial uses. Derbyshire (including the Peak District) and the Yorkshire Dales National Park are acknowledged to be the most important suppliers of crushed rock aggregates into West Yorkshire, with lesser, but still significant, quantities supplied from the North Yorkshire County Council administrative area, South Yorkshire and the North-West Region.

4.1.10. In relation to Sand and Gravel, the North Yorkshire County administrative area is highlighted as the key supplier into West Yorkshire, with significant quantities of sand and gravel also thought to be transported into West Yorkshire from East Yorkshire, South Yorkshire and the North-West Region. As discussed further in following sections, it is clear, therefore, that continuity of supply of aggregates for consumption within West Yorkshire relates far more to cooperation with adjoining authorities than to managing aggregate supplies within West Yorkshire itself.

4.2. Recycled and Secondary Aggregates (RSA)

4.2.1. 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.

4.2.2. Sources of secondary aggregates are much more limited with only one power station, Ferrybridge, which is scheduled to close by March 2016, 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.

4.2.3. 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

4.2.4. Prince of Wales Colliery spoil tip site and some other unrestored sites within Wakefield represent a potential source of supply of secondary aggregate. However the viability of exploiting this source is not currently apparent, potentially due to a lack of demand in terms of large civil contracts requiring significant quantities of bulk fill. Market interest in colliery spoil exploitation may be more likely to be shown in the current spoil tip locations in nearby North Yorkshire associated with the Kellingley colliery.

4.2.5. 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:

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

4.2.7. 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:

FIG7 – Types of Recycled and Secondary Aggregate

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	

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

4.2.8. 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.

TAB14 – Composition of Construction & Demolition Waste

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**	

4.2.9. 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.

4.2.10. 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.

TAB15 – Management of Construction and Demolition Waste

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	

4.2.11. 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 16 below:

TAB16 – Regional Estimate of CDEW Arisings

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**

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

4.2.12. 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.

4.2.13. 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 17 below:

TAB17 – Comparison of 2005 & 2008 CDEW Data

	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

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

4.2.14. If the changes to the national figures found in the WRAP 2008 report are applied to the West Yorkshire figures from the CLG 2005 report 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.

TAB18 – West Yorkshire Estimate of CDEW Arisings 2005 & 2008

	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%)

4.2.15. The estimates set out in the table above are considered to represent the best currently available data on RSA production within West Yorkshire. However in addition to the above several MPAs have provided individual estimates of the quantity of RSA produced within their administrative areas within their 2014 data returns, as set out in table 19 below:

TAB19 – West Yorkshire Local Authority Estimates of RSA Production

Planning Authority	Estimated RSA Production Total 2014
Calderdale	70,000 tonnes
Leeds CC	360,000 tonnes (figure anticipated to be a significant underestimate - low number of survey returns)
Kirklees	No Estimate Provided
Wakefield	No Estimate Provided
Bradford	No Estimate Provided

4.2.16. It is notable that the 2014 RSA production figure for Leeds City Council set out in the above table is substantially lower than the 600,000 tonne figure supplied by Leeds for the 2013 period. However this difference in unlikely to indicate any true underlying downwards trend in the quantity of RSA produced in Leeds. Instead the difference is thought to reflect low survey return rates from aggregate recyclers in Leeds, which has prevented Leeds CC from calculating a realistic total RSA production figure with any degree of accuracy.

4.2.17. The approximately 2 million tonnes of RSA estimated to have been produced in West Yorkshire in 2008 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.

4.2.18. 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.

4.2.19. 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.

4.2.20. 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.

4.2.21. In terms of the safeguarding of resources it should be noted that 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.

4.2.22. The emerging Bradford Waste Management DPD also safeguards aggregate recycling sites under draft policy WDM. However none of the aggregate recycling sites in the other local authorities within West Yorkshire are currently safeguarded. The safeguarding of appropriate sites for aggregate recycling within the Local Plans of other West Yorkshire authorities may be beneficial in terms of maximising RSA supply capability within West Yorkshire.

4.3. Mineral use in aggregate

4.3.1. Although aggregate minerals are used in a way which changes little between one year and the next, evolution of use nevertheless does take place. An example of this can be seen in the way that recycled aggregate had made an appreciable inroad into the sales of low quality virgin aggregate. Product refinement has also begun to allow recycled aggregates to be substituted for a limited proportion of higher quality virgin aggregates in ready mix concrete and asphalt.

4.3.2. Furthermore, 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.

4.3.3. 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.

4.4. Potential Role of Marine Aggregate (Sand and Gravel)

4.4.1. The part of the North Sea situated adjacent to the Yorkshire and Humber coast is known to contain hundreds of millions of tonnes of good quality sand and gravel, which is of a higher quality than most of the indigenous sand and gravel in West Yorkshire. Marine aggregate is substitutable for land won sand and gravel and marine coarse sand is known to be a desirable product for concreting.

4.4.2. However, despite the availability of this high quality resource, 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).

4.4.3. In 2013 all Mineral Planning Authorities within the Yorkshire and Humber Region 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.

4.4.4. 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.

4.4.5. 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. Nonetheless, in the shorter term (the next 5 years), it is possible that small scale transfer by canal barge may begin using existing facilities and equipment.

4.4.6. Partially in recognition of the strategic importance of marine aggregates and associated transportation infrastructure, Leeds City Council have safeguarded potential and existing aggregate wharves through their Local Plan. The policies provide protection for existing railway sidings and canal wharves for freight use and also allocate a new wharf site and a new rail siding site. The rail siding site is specifically for minerals freight.

4.4.7. An application for the development of a new aggregate wharf at Haigh Park Road, Sourton, was approved by Leeds City Council on 02 April 2015. This new wharf is expected to distribute approximately 2,000 tonnes per week of aggregate (sand and gravel) arriving from the Humber Ports.

4.4.8. In order to further understand the potential barriers to efficiently distributing marine aggregates within the Region the Crown Estate has let a contract to ARUP to look in more detail at the logistics of marine aggregate transportation. This should better inform Local Authorities in terms of how to plan for and facilitate a potential future increase in the use of marine won aggregates within West Yorkshire and unlock the potential for this resource to compensate for the diminishing availability of land won concreting sand and gravel.

4.5. Factors Which May Influence Future Demand

4.5.1. A key element of an LAA is the consideration of whether there are any known factors which may affect future demand for minerals. Such factors can include population growth, economic trends or significant infrastructure projects.

4.5.2. In considering future changes in aggregate provision it should be borne in mind that total Yorkshire and Humber aggregate sales, at approximately 2.5 million tonnes of sand and gravel and 8 million tonnes of crushed rock aggregates in 2013, represent only 51% and 59% of the figure calculated by the government to be necessary to maintain adequate aggregate supplies in 2009 in their 2005-2020 aggregate provision guidelines. Therefore it could be argued that current aggregate production levels fall significantly below the levels likely to be required to adequately meet demand, irrespective of any potential future changes in demand.

4.5.3. The approach taken in the first West Yorkshire LAA was to recognise that a number of factors may affect future demand but to revert to the 10 year average sales method of land bank calculation, given the acknowledged difficulties associated with attempting to predict future changes in demand with any degree of accuracy. However a commitment was made to reviewing this position during the preparation of subsequent LAAs and taking advantage of any evidence which becomes available in the future to adjust the landbank aggregate apportionment figure to take account of likely future changes in demand.

4.5.4. During the process of preparing the 2014 LAA it was identified that North Yorkshire County Council had undertaken substantial demand forecasting work as part of the preparation work for their Local Plan and future LAAs. This work was set out in their July 2014 discussion paper *Forecasting demand for aggregate minerals* and has now been incorporated into the North Yorkshire Sub-region LAA (NYLAA) First Review, February 2015. The methodology included in the demand forecasting discussion paper was updated and revised prior to incorporation in the NYLAA first review.

4.5.5. The North Yorkshire approach, whilst recognising the difficulties and uncertainties associated with forecasting aggregate demand, suggested a forecasting methodology based on linking future demand

to the predicted rate of change of future house building across the main market areas served by North Yorkshire (including West Yorkshire). Further adjustments were then made to take account of changing aggregate supply patterns (supply constraints in West and South Yorkshire).

4.5.6. This forecasting method is based upon a comparison of 10 year average historic house completions with the target future house building rates set out in relevant Local Development Plans. The figure arrived at within the NYLAA First Review document is that a 53% uplift in house building would be required to meet planned housing provision levels within the market area for minerals extracted from the North Yorkshire sub-region.

4.5.7. The potential for one-off infrastructure projects to increase aggregate demand was also considered but the NYLAA first assesses that there is no strong basis for concluding that aggregate demand associated with infrastructure projects is likely to increase significantly over and above historic average levels.

4.5.8. For the purposes of deriving figures which are specifically relevant to West Yorkshire, a similar exercise has been undertaken as part of the West Yorkshire Local Aggregates Assessment 2015, comparing 10 year average historic house completions with the target future house building rate set out in relevant Development Plans for Bradford, Leeds, Calderdale, Wakefield and Kirklees. These data have been taken from the most up-to-date Annual Monitoring Reports and emerging or adopted Local Plan Documents for the relevant Local Authorities. The results of this comparison are set out in table 20 below:

TAB20 – West Yorkshire Comparison of Housing Targets vs. Completions

	Planned Annual Housing Requirement	Historic Average Housing Completions	Uplift Required	% Uplift Required
Leeds	4,700	2,403	2,297	96%
Bradford	2,200	1,371	829	60%
Wakefield	1,600	1,105	495	45%
Kirklees	1,123	1,239	-116	-9%
Calderdale	555	844	-289	-34%
W Yorkshire Total	10,178	6,962	3,216	46%

4.5.9. There has been some debate about the relationship between increased house building and increased demand for aggregates. North Yorkshire initially proposed an estimate of house building accounting for only 15% of aggregate demand. However the Minerals Products Association raised concerns in relation to this estimate and set out their view that it would be safer to link housing growth to 100% of demand.

4.5.10. The NYLAA First Review includes consideration of a range of approaches to link the housing uplift figure to aggregate demand. The outcome of this consideration is a proposed 25% uplift in relation to sand and gravel (assuming that approximately 50% of demand for sand and gravel is likely to be associated with house building).

4.5.11. In relation to crushed rock the NYLAA first Review indicates that industry representatives have expressed the view that there is more uncertainty about the future level of demand and its link to housing growth. The NYLAA First Review therefore adopts a more conservative approach of uplifting the crushed rock sales average by 16%.

4.5.12. For West Yorkshire it is acknowledged that demand for the generally lower specification aggregates produced within the sub-region relates minimally to the economic demand for the consumption of aggregates within West Yorkshire. This is particularly the case in relation to the need for concrete grade aggregates and roadstone as these materials are not produced in significant quantities within West Yorkshire.

4.5.13. Therefore the purpose of applying an uplift to sales averages is not to allow for the aggregates required to deliver planned housing growth to be provided for from within West Yorkshire. Instead the uplift should be seen as a mechanism to compensate for the increased pressure future housing and economic development within West Yorkshire will place upon minerals supplies derived from neighbouring authorities and to relieve pressure on neighbouring authorities to supply lower specification aggregates.

4.5.14. Furthermore it should be noted that the role that West Yorkshire plays in aggregate supply is dominated by crushed rock aggregates rather than sand and gravel. Therefore applying a lower uplift to the crushed rock aggregate apportionment, the approach taken in the NYLAA, would disproportionately diminish the implied overall target for increased aggregate production from West Yorkshire.

4.5.15. In this context it is considered appropriate to apply a less conservative method within the West Yorkshire LAA. Therefore the uplift approach adopted in the 2015 LAA, which has been maintained from the 2014 LAA, is to assume that the increase in aggregate production required to deliver planned housing growth would be approximately 50% of the required increase in house building in relation to both crushed rock and sand and gravel aggregates.

4.5.16. The West Yorkshire specific data set out in table 20 indicates that the increase in house building which would specifically be required for West Yorkshire to meet the housing requirements calculated within adopted and emerging Local Plans is 46%. On this basis it is considered appropriate to plan for a 25% uplift in aggregate supply within West Yorkshire to compensate for the increased demand house building growth in West Yorkshire will place upon aggregate supplies from neighbouring authorities.

4.5.17. Planning for a 25% increase in aggregate provision should also help West Yorkshire contribute to moving the Region closer to the aggregate provision figure set out in the 2005-2020 guidelines. Further details of the methodology used to calculate the uplift percentage can be found at Appendix 3 to this report.

5. SUMMARY AND CONCLUSIONS

5.1. The NPPF advises that a Local Aggregate Assessment should set an aggregate 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 West Yorkshire is as follows:

TAB21 – Aggregate Historic Sales Average

Aggregate Type	Average Annual Tonnage
Sand and Gravel	100,000 (0.10mt)
Crushed Rock	880,000 (0.88mt)

5.2. Significant, mainly lower specification, reserves of crushed rock aggregate remain within West Yorkshire. However, as of 31 December 2014, only one sand and gravel extraction site remains within West Yorkshire possessing relatively modest reserves. Based upon the aggregate provision figures for Yorkshire and the Humber set out in the government guidelines for the 2005-2020 period there appears to be a continuing deficiency within both West Yorkshire the wider Region in relation to an under supply of the aggregates required to meet industrial requirements.

5.3. It is possible that the need for virgin land won aggregate may be tempered by improved efficiency and economy of use, substitution with marine-won aggregates and by improved specifications for secondary and recycled aggregates leading to their greater market penetration. However it is not possible to state with any confidence at this stage that the demand for land won-aggregates is likely to diminish in the foreseeable future.

5.4. The objective in setting an aggregate apportionment for West Yorkshire must exclude the possibility of meeting our own aggregate needs, but rather instead is intended to set a level of future provision for the lower quality aggregates which the sub-region is capable of producing which is sustainable and appropriate.

5.5. In summary the other relevant local information which has been considered in preparing the Local Aggregates Assessment for West Yorkshire 2015 is as set out in section 4 and summarised in table 22 overleaf:

TAB22 – Summary of Other Data Relevant to Calculating Landbanks

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**
West Yorkshire Apportionment of Regional Guidelines for Aggregates Provision in England: 2005-2020 (based upon 2009 sub-regional sales distribution) – West Yorkshire 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 West Yorkshire from other Regions/ Sub-Regions in 2009	**760,000**
Estimate of Land Won Crushed Rock Imported to West Yorkshire from other Regions/ Sub-Regions in 2009	**1,860,000**
Estimated Increase in Aggregate Production Required for Deliver Planned Increases in Housing Delivery within West Yorkshire	**25%**

5.6. In conclusion it is considered that applying a 25% uplift to historic sales averages is considered to arrive at a figure which embodies some aspiration for West Yorkshire to play its role in providing for projected increased future whilst remaining realistic and proportionate to the constraints of the West Yorkshire aggregate resource.

5.7. The aggregate apportionments and landbank calculations set out in table 23 overleaf are therefore proposed for the Local Aggregate Assessment for West Yorkshire 2015. 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.

TAB23 – West Yorkshire Aggregate Landbanks 2014

Note: All Figures in Million Tonnes Unless Otherwise Stated	Reserve	Annual Sales Average 2005-2014	25 % Uplifted Aggregate Apportionment	Landbank
Sand and Gravel	880,000	100,000	125,000	**7 Years 0 Months**
Crushed Rock	25,700,000	880,000	1,100,000	**23 Years 4 Months**

5.8. The Sand and Gravel landbank of 7 Years is equal to the minimum landbank advocated within paragraph 145 of the National Planning Policy Framework (NPPF). This landbank can be seen to have increased by 6 months relative to the 2014 LAA landbank; this increase is due to the continuing decline in sales and the depressing effect this has on the 10 year sales average figure.

5.9. The crushed rock aggregate landbank of 23 Years and 4 Months is 13 years and 4 months greater than the 10 year minimum advocated in the NPPF. This landbank can be seen to have reduced by 4 years relative to the 2014 LAA landbank; this reduction is primarily due to a reappraisal and consequent revision down of sandstone aggregate reserve estimates in Bradford and Calderdale.

5.10. Although neither the crushed rock nor the sand and gravel landbank now falls below the relevant NPPF guideline level, it should be noted that the landbank length guidelines included within the NPPF are minimums not maximums. Mineral Planning Authorities should also consider the other relevant information set out within this report when considering the need for the release of additional aggregate reserves. In particular, relevant considerations when assessing proposals for new minerals development may include:

a. The unsuitability of a substantial proportion of the currently permitted reserves of crushed rock aggregate within West Yorkshire for higher specification uses, such as concrete making and roadstone.
b. The continuing dependence of West Yorkshire upon neighbouring authorities for the majority of its construction aggregate needs, particularly in relation to concrete and roadstone grade crushed rock aggregates and concrete grade sand and gravel.
c. The reliance of West Yorkshire upon high specification crushed rock sourced from the Yorkshire Dales National Park; an area where the NPPF indicates extraction should be reduced (as far as is practicable).
d. The relatively low contribution which West Yorkshire currently makes to the overall supply of construction aggregates within the Yorkshire and Humber Region, particularly in relation to sand and gravel.
e. The general undersupply of aggregates within the Yorkshire and Humber Region when assessed against the National and regional guidelines for aggregates provision in England 2005-2020.

f. The benefits of pursuing any sustainable opportunities to contribute towards the supply of the generally lower specification aggregates produced within West Yorkshire, and continuing to provide facilities for the production of recycled aggregates, in terms of compensating for West Yorkshire's economic dependence upon primary aggregates quarried from neighbouring authorities.

6. ROLE OF LOCALISM IN AGGREGATE SUPPLY

6.1. Background

6.1.1. 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.

6.1.2. 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.

6.1.3. 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.

6.1.4. Paragraph 17 of the NPPF sets out the strategic issues where cooperation might be appropriate. Paragraph 178 to 181 of the NPFF 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.

6.2. Securing the Necessary Aggregate

6.2.1. 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.

6.2.2. The purpose of this statement is to set out how the councils will proceed in liaison with the AWPs to ensure the development of a consistent and complementary policy approach towards minerals supply. The authorities will seek to corporate to 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.

6.3. Agreements to be Sought

6.3.1. Under Duty to Corporate the West Yorkshire authorities will need to seek agreement with NYCC, East Riding, Derbyshire and Yorkshire Dales to ensure that these authorities are continuing to include in their plans the exportation of minerals to West Yorkshire.

6.3.2. Such an agreement was recently reached with NYCC and a report on the connectivity between minerals planning in West Yorkshire and the North Yorkshire Sub Region was ratified by the relevant Leeds City Region/ West Yorkshire Combined Authority Portfolio Holders on 18 September 2015. The report confirmed that

6.3.3. ‘Discussion and liaison continues to take place at officer level between North Yorkshire County Council (NYCC), Derbyshire and the West Yorkshire authorities, with the WY Lead officer for WYCA meeting/liaising with NYCC to discuss the particular connectivity issues for a range of minerals and waste matter’.

6.3.4. One of the outcomes of this continuing connectivity is an agreement to produce a joint Position Statement in relation to Magnesian Limestone, which will also encompass the South-Yorkshire sub-region. This document should help to identify the cross-boundary minerals planning issues associated with the Magnesian Limestone resource and inform the approach taken in future Local Aggregates Assessments for the three authorities.

6.3.5. The connectivity report also confirmed that: ‘Consideration should also be given to a similar endorsement between WYCA and Derbyshire CC’. A meeting between the West Yorkshire lead officer for the West Yorkshire Combined Authority/ Leeds City Region and representatives from Derbyshire CC has now been arranged with a view to progressing a similar connectivity agreement between Derbyshire and West Yorkshire. This document will serve to acknowledge and formalise the minerals planning linkages between West Yorkshire and Derbyshire.

Appendix 1

Active quarries which produce aggregate as at 31 December 2014

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	Mr J Smith	
9	Ringby Quarries, Swalewsmoor	Mr J Tooby	Sandstone, grit
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, 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, fine
20	Elland Edge Quarries, Elland	Rand & Asquith	Sandstone, grit
21	White Rock Quarry	Marshall plc	Sandstone, fine
22	Wood Top Quarry	Cleanmet	
	KIRKLEES		
23	Moselden Quarry, Scammonden	Marshalls Natural Stone	Sandstone, grit
24	Crosland Moor Quarries, Huddersfield	Johnson Wellfield Quarries	Sandstone, grit
25	Windy Ridge Quarry, Holmfirth	S. Peel and Son	Sandstone, grit
26	Hillhouse Edge Quarry, Holmfirth	Saxon Moor Ltd.	Sandstone, grit
27	Appleton Quarry, Shepley	Marshalls Natural Stone	Sandstone, grit
28	Sovereign Quarry, Shepley	Marshalls Natural Stone	Sandstone, grit
29	Temple Quarry, Grange Moor	Holgate Construction Lt	Sandstone, grit
30	Forge Lane Sand and Gravel Quarry	Dewsbury Sand & Gravel Lt	Sand & Gravel
	LEEDS		
31	Hawksworth Quarry, Guiseley	Apperley Bridge Aggre. Ltd	Sandstone, grit
32	Moor Top Quarry, Guiseley	RG Stone Sales	Sandstone, grit
33	Blackhill Quarry, Bramhope	Mone Bros Excavations Ltd	Sandstone, grit
34	Arthington Quarry, Arthington	Blackshaw Landfill Ltd	Sandstone, grit
35	High Moor Quarry, Bramham	Samuel Smith Old Brewery	Limestone, mag.

36 37	Britannia Quarry, Morley Howley Park Quarry, Morley	Woodkirk Stone Sales Ltd Marshalls Natural Stone	Sandstone, fine Sandstone, fine
	WAKEFIELD		
38 39	Darrington Quarry (part), Knottingley Plasmor Quarry, Knottingley	FCC Environment Plasmor Ltd	Limestone, mag. Limestone, mag.
	Sites permitted but not worked		
	SITE		AGG.TYPE
	Forge Lane, Dewsbury – K Strands, Horbury - W ROMP Foxholes, Normanton - W ROMP Penbank, Castleford - W ROMP		Sand & gravel Sand & gravel Sand & gravel Sand & gravel

Appendix 2

Table 13 (Import to west Yorkshire) Background Data

- The Local Aggregate Assessment for the North Yorkshire Sub-region 2013 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.
- The collation of the results of the 2009 aggregate minerals survey for England and Wales indicates that the total sales of crushed rock and sand and gravel from North Yorkshire to the Yorkshire & Humber Region were 714,000 tonnes and 403,000 tonnes respectively.
- Therefore it can be calculated that West Yorkshire accounts for 35% of total Yorkshire & Humber Sales of crushed rock and 60% of total Yorkshire and Humber sales of sand and gravel.
- No figure for crushed rock exports from the Yorkshire Dales National Park to West Yorkshire is provided within either the North Yorkshire LAA or the Collation of the results of the 2009 aggregate minerals survey for England and Wales; however a Yorkshire and Humber figure of 1,295,000 tonnes is provided in the collation report.
- It is considered that the most appropriate readily available method of apportioning Yorkshire Dales crushed Rock sales to West Yorkshire is to assume that a similar proportion of total Yorkshire Dales crushed rock sales to Yorkshire and Humber is shipped to West Yorkshire as is the case for North Yorkshire, i.e. 35%.
- Therefore it can be estimated that approximately 453,250 tonnes of the crushed rock extracted with the Yorkshire Dales National Park is likely to have been sold to consumers in West Yorkshire in 2009.
- It is likely that sand and gravel and crushed rock are also supplied into West Yorkshire from 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 South and East Yorkshire is shipped to West Yorkshire as is the case for North Yorkshire.
- 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.
- Data on trans-regional aggregate flows has been published in the Derbyshire, Derby and Peak District National Park LAA 2014.
- 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.
- 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.
- 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).
- The Table below is a version of table 13 which reveals the calculations which have been used to derive the estimates.

Note: All figures in Tonnes and relate to 2009	Annual Exports of Sand & Gravel to West Yorkshire	Annual Exports of Crushed Rock to West Yorkshire
North Yorkshire County Council	240,000 [figure taken from North Yorkshire LAA]	250,000 [figure taken from North Yorkshire LAA]
Yorkshire Dales	0	1,295,000*0.35= 453,250
East Yorkshire	150,000 [Estimate Provided by East Yorkshire CC]	64,000*0.11= 7,040
South Yorkshire	523,000*0.14= 73,220	1,282,000*0.11= 141,020
Derbyshire	9,237*0.42= 3,880	1,139,009*0.42= 478,384
North-West	165,500*0.42= 69,510	188,480*0.42= 79,161

Appendix 3

Detailed Explanation of Uplift Calculation Methodology

- The uplift figure (U) is a figure intended to provide an estimate of the increase in production which would be required at quarries to meet the aggregate demands which would be associated with full delivery of the housing growth set out in emerging and adopted Local Plans.
- In order to undertake this calculation the following figures are needed.
- C – Historic Average Annual Number of Housing completions
- P – Planned Annul Housing Delivery
- H – % increase in house building required to meet Housing Delivery Targets
- A - % of quarry output utilised for house building and associated infrastructure
- Figure C was calculated by obtaining house completion data from Annual Monitoring Reports for the period 2003/04 to 2012/13 and averaging out housing completions over this 10 year period for each of the 5 West Yorkshire Authorities as shown in column 2 of TAB20.
- Figure P was calculated from a review of the emerging or adopted Local Plans of the 5 West Yorkshire Authorities as shown in column 1 of TAB 20.
- Figure H was calculated by totalling the C and P figures for West Yorkshire as a whole and applying the following formula to the totals:
    - (P-C)/C.
- The result for figure H based on the data in TAB20 was 0.46 or 46%, i.e. a 46% increase in 10 year average house building in West Yorkshire overall will be required to meet planned housing delivery targets for West Yorkshire overall.
- A is a difficult figure to derive without the benefit of an extensive research project which analyses the output of crushed rock and sand and gravel sites and identifies the fates of all quarried material categorising these fates into A) quarried material used directly or indirectly for house building and associated infrastructure and B) quarried material not used for any purpose associated with house building.
- North Yorkshire CC have undertaken some research in this regard and through a process of consultation eventually came to a compromise position with the Minerals Products Association who accepted that a figure of approximately 50% of output at sand and gravel sites could be associated with house building.
- More details of the methodology used to arrive at this 50% figure can be found in the following document:
    - ‘Forecasting demand for aggregate minerals Discussion Paper - July 2014’, published online by North Yorkshire County Council
- A lower figure was derived for crushed rock quarries; however, as West Yorkshire produces nominal amounts of sand and gravel and larger amounts of crushed rock, and the uplift figure is intended to compensate for West Yorkshire’s reliance on aggregate material supplied from neighbouring authorities rather than allow for minerals needs associated with increased housing growth to be met from within West Yorkshire, it was considered appropriate to apply the higher figure of 50% for all West Yorkshire Aggregate.

- Having arrived at a satisfactory figure for H and A, i.e. 46% and 50% respectively the uplift in aggregate production required to deliver planned housing growth could then be calculated by applying the simple formula:
    - H*A, i.e. 0.46*0.5 = 0.23.
- To avoid giving a false impression of precision the uplift figure U was rounded to the nearest 5% giving a figure for U of 25%
- The full formula could therefore be expressed as:

$$U=(((P-C)/C)*A)*100$$