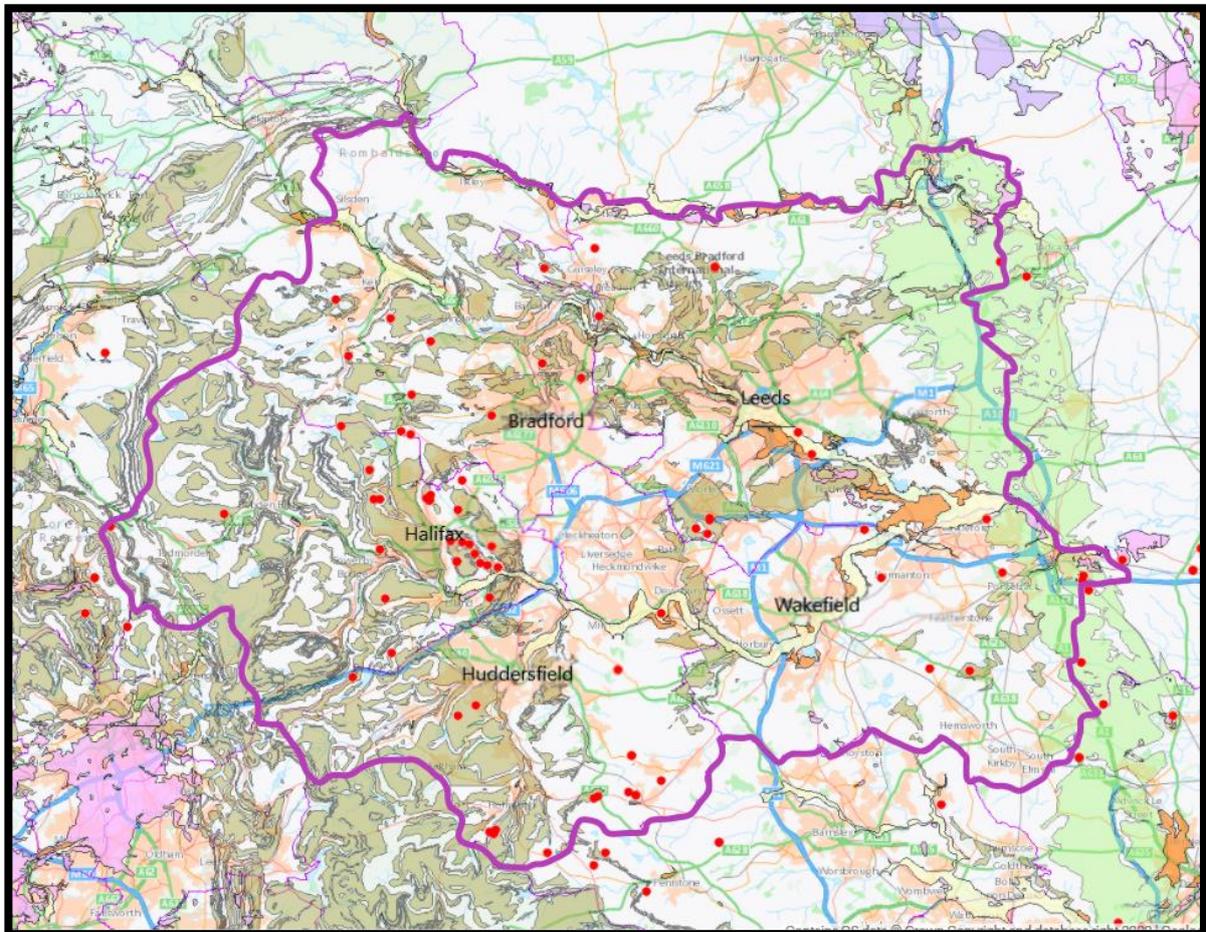




**West Yorkshire Local Aggregate Assessment 2021  
(2019 & 2020 Data)**





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Appendix 1 - Active quarries which produce aggregate as at 01 December 2020

Appendix 2 - Detailed Explanation of Uplift Calculation Methodology



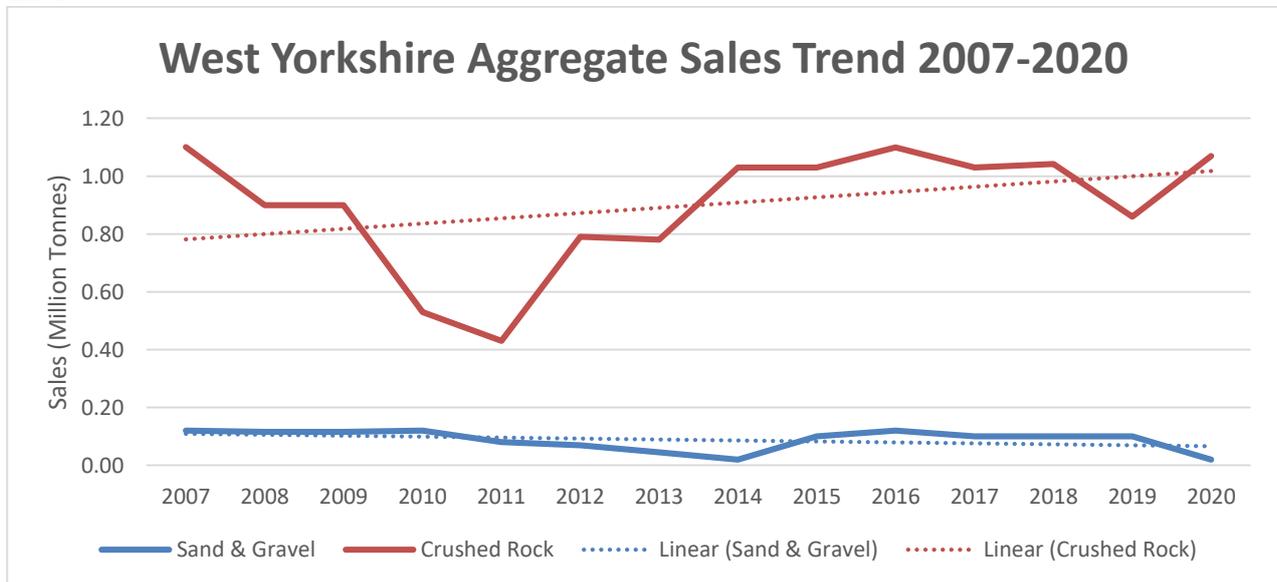
# EXECUTIVE SUMMARY

This document is the eighth of the annual Local Aggregate Assessments (LAA) undertaken by the West Yorkshire Combined Authority on behalf of 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 West Yorkshire Local Aggregate Assessment 2021, incorporating 2019 and 2020 data. No LAA was produced in 2020 given the resourcing and surveying limitations associated with the COVID-19 crisis.

The LAA 2021 finds that the position with sand and gravel remains concerning, with the single working sand and gravel quarry within West Yorkshire nearing exhaustion. Further reserves will need to be released if any primary sand and gravel extraction is to continue within West Yorkshire, beyond the building sand which is produced as a by-product at several sandstone quarries. There is evidence that an increasing quantity of marine dredged sand and gravel aggregates are now entering the West Yorkshire market; however the extent to which marine aggregates can compensate for declining supplies of land won material is not yet understood.

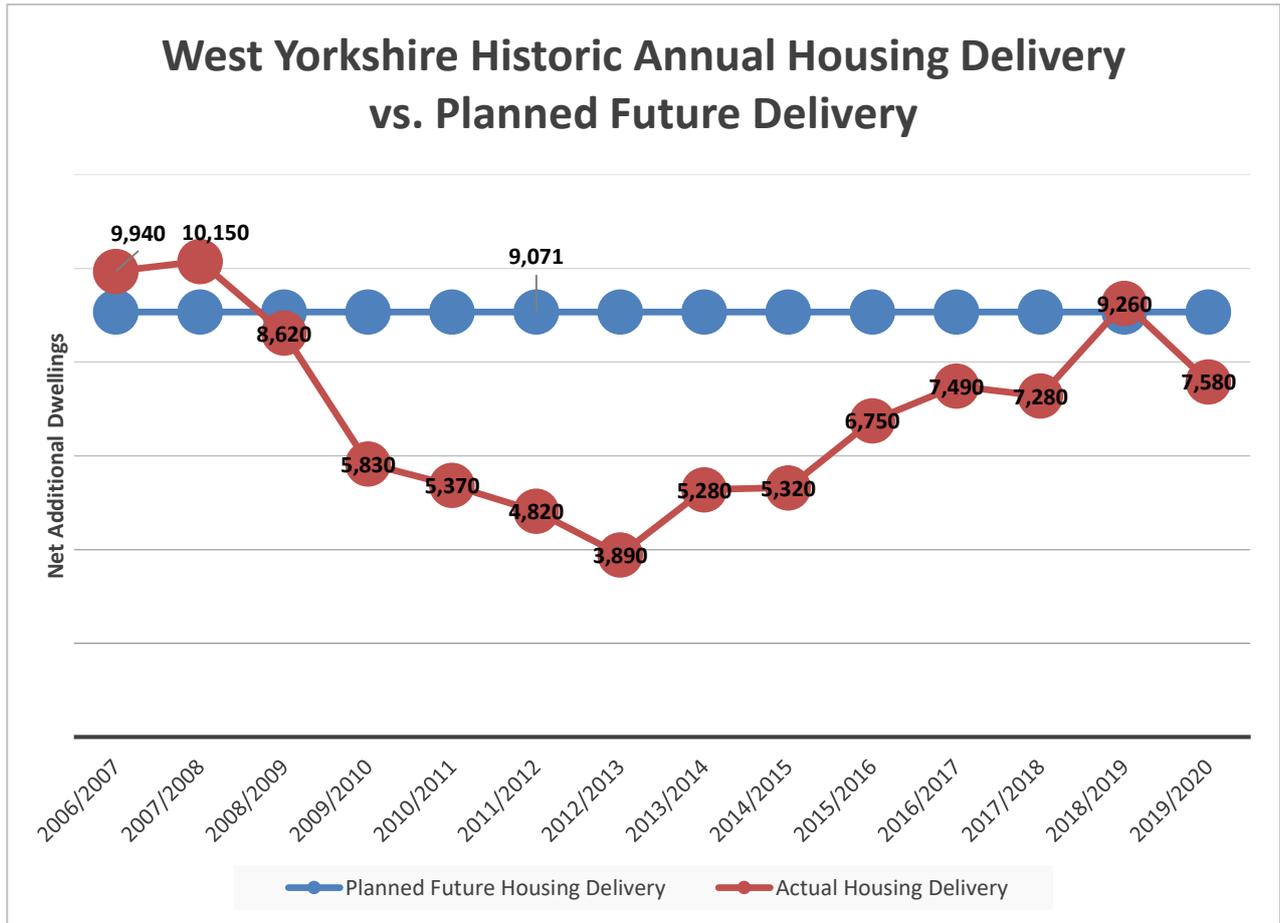
Crushed rock aggregate production remains relatively steady at approximately 1 million tonnes per annum, with total quarry output for West Yorkshire having remained within a range from 1 million to 1.1 million tonnes per annum for the last 7 years (with the exception of 2019). Chart EF1 illustrates the 10 year aggregates sales trend for West Yorkshire:

## EF1

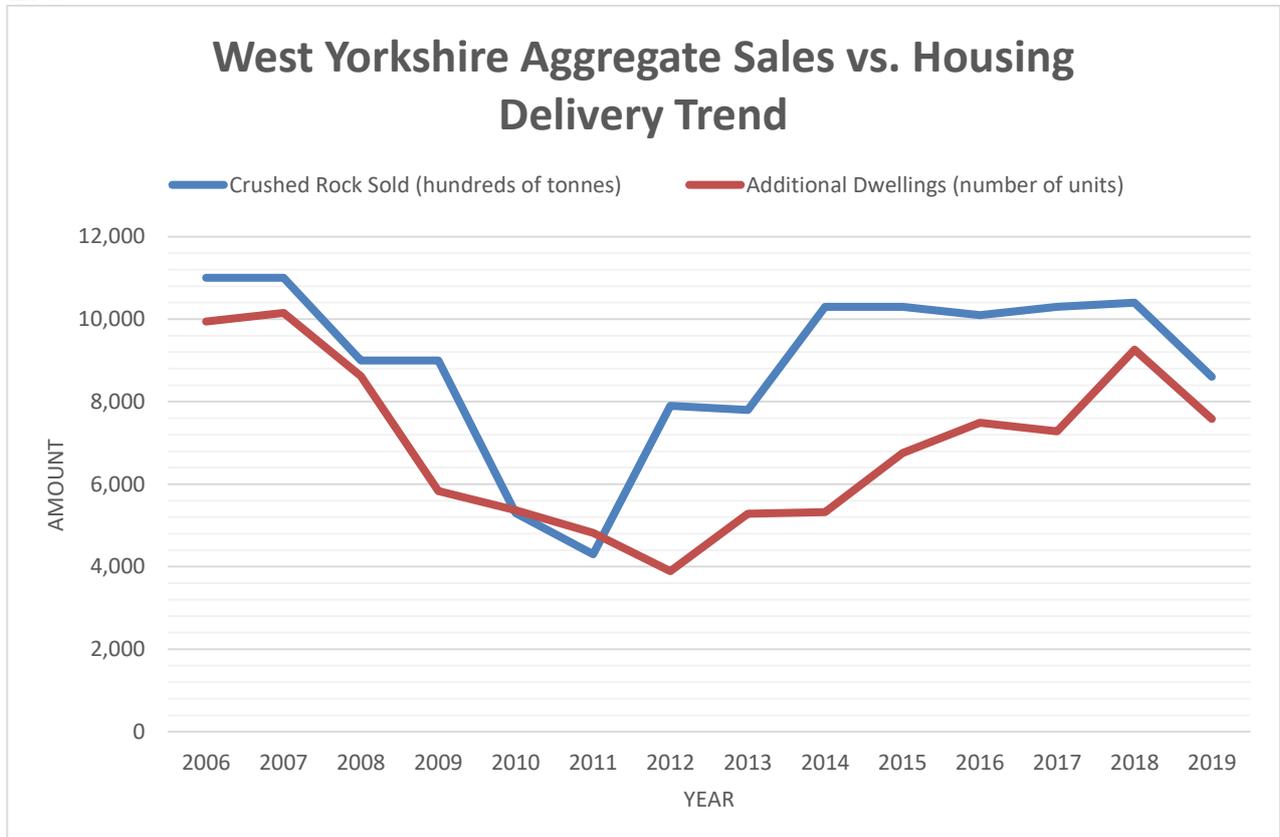


Ten year sales averages alone are not considered to be adequate to use as the basis for calculating the aggregate landbank for West Yorkshire. This is primarily because West Yorkshire Local Planning Authorities are planning for a significant increase in house building in the future, as illustrated by chart EF2. This remains the case despite recent significant increases in housebuilding across West Yorkshire and changes to housing need forecasting which has led to some moderation of housing delivery targets in emerging new Local Plans. A strong relationship is apparent between housing delivery and aggregate production, as shown by chart EF3. Other major infrastructure projects are also anticipated, which are likely to impact on the demand for aggregates.

EF2



EF3



Consequently an uplift factor has been applied to the 10 year aggregate sales averages for the purpose of calculating the West Yorkshire Aggregate Landbank. This uplift represents an estimate of the increase in aggregate sales which would be required to deliver on planned future housing growth and associated infrastructure demands. The calculated landbanks, adjusted in accordance with the uplift methodology described in this report, are shown in the table below.

### West Yorkshire Aggregate Landbanks 2020

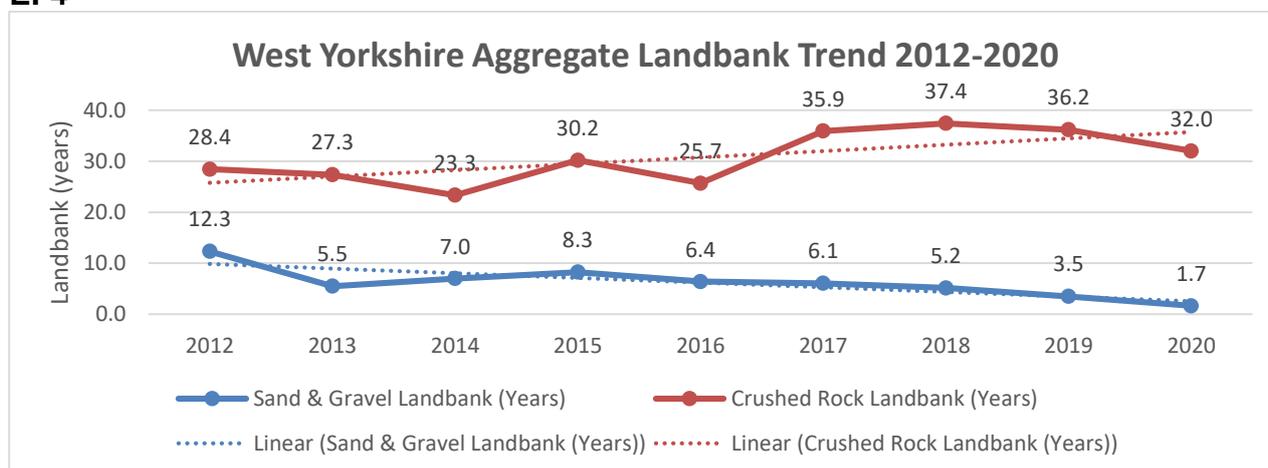
Note: All Figures in Tonnes Unless Otherwise Stated	Reserve 2020	Annual Sales Average 20011-2020	22% Uplifted Aggregate Apportionment	Landbank
<b>Sand and Gravel</b>	150,000	80,000	100,000	<b>1 Year 6 Months</b>
<b>Crushed Rock</b>	36,960,000	920,000	1,120,000	<b>33 Years 0 Months</b>

The Sand and Gravel landbank of **1 Year and 6 Months** is substantially below the minimum landbank required by paragraph 213(f) of the National Planning Policy Framework (NPPF), indicating that the release of additional reserves is required. Sand and gravel reserves and extraction rates in West Yorkshire are now at a critical level - with the vast majority of the sand and gravel consumed within West Yorkshire being sourced either from quarries located in other mineral planning authorities or from marine won sources.

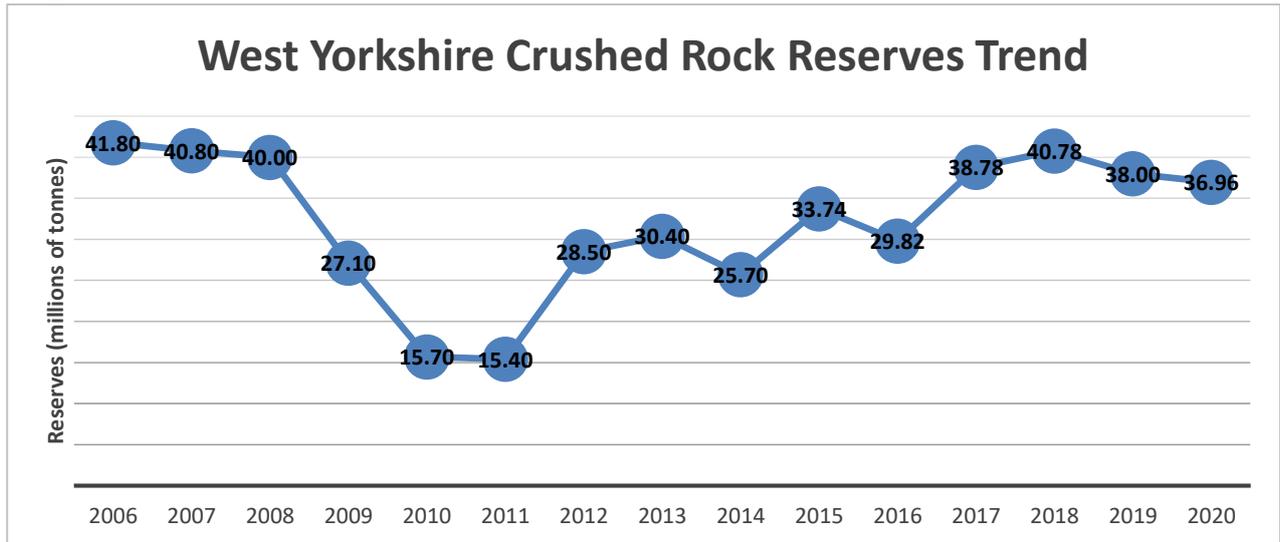
There is some prospect of the release of additional reserves - with a planning application having been submitted in 2019 for a new sand and gravel quarry in Wakefield with a 1.6 million tonne estimated reserve to be worked at a rate of 150,000 tonnes per year and with all mineral to be transported by barge. However this would just maintain the current low levels of production and avoid the complete collapse of the sand and gravel extraction industry within West Yorkshire rather than making any significant inroads into addressing the current trade imbalance.

The crushed rock aggregate landbank of **33 Years and 0 Months** is significantly greater than the 10 year minimum level required by the NPPF. However, as illustrated by Chart EF5, crushed rock reserves remain below pre-recession levels and should not therefore necessarily be seen as excessive or problematic, particularly in light of West Yorkshire's dependence upon neighbouring regions for the supply of higher specification crushed rock aggregates. The generally upwards, but recently plateauing/ declining, trend of the Crushed Rock Aggregate Landbank and consistently downwards trend of the Sand and Gravel Landbank are illustrated on chart EF4.

#### EF4



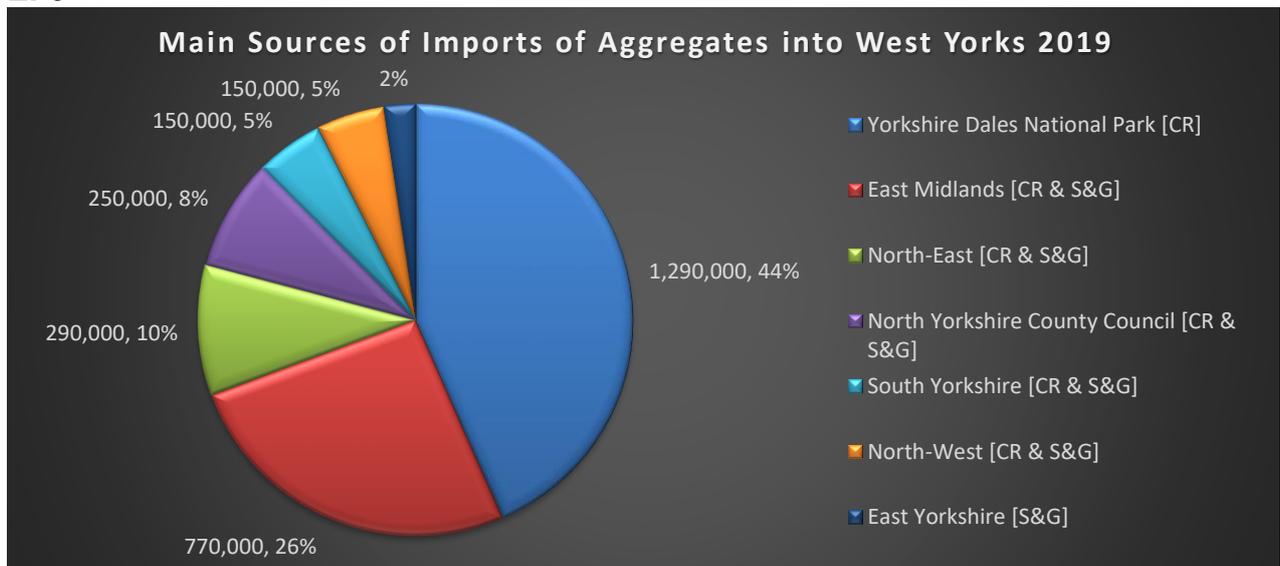
**EF5**



According to the *Collation of the results of the 2019 Aggregate Minerals survey for England and Wales* the majority of the construction aggregate produced in England and Wales was used for either concrete manufacture (31% in 2019) or road construction (25% in 2019). For geological reasons described in more detail elsewhere in this report, the mineral resources which are worked within West Yorkshire are generally thought to be incapable of producing significant quantities of the higher specification aggregates required for use in either road construction or concrete manufacture.

Consequently West Yorkshire will remain reliant upon the crushed rock aggregates produced in neighbouring authorities to meet the majority of its construction aggregate needs. The two principal sources for the Crushed Rock Aggregates consumed within West Yorkshire are the Yorkshire Dales National Park and Derbyshire. Quarries from these two areas collectively provided for over two thirds of the crushed rock aggregates consumed within West Yorkshire in 2019 according to the data tables provided by the BGS in association with the 2019 Aggregate Minerals survey. Figure EF6 below illustrates the distribution of aggregate imports into West Yorkshire between relevant MPAs.

**EF6<sup>1</sup>**



<sup>1</sup> BGS, 2021 - Derived from Aggregate Minerals Survey for England and Wales 2019 Data Tables Provided to MPAs

In addition to the length of aggregate landbanks, other relevant information should be considered when assessing the need for the release of additional aggregate reserves. **The Key Messages** and relevant considerations when assessing proposals and allocations for minerals development and associated infrastructure are:

- i. **Additional aggregate supplies will be required-** Housing delivery has significantly improved in West Yorkshire in recent years; however there remains a gap between the number of houses being built and the objectively assessed need for new housing. Additionally, a range of infrastructure projects are in the pipeline including Mass Transit for West Yorkshire, Northern Powerhouse Rail and upgrades of the Trans-Pennine rail route and associated Rail Interchange upgrades. Additional aggregate supplies will be required if the housing delivery gap is to be filled and the construction aggregate demands of the planned infrastructure projects met.
- ii. **West Yorkshire currently makes a low contribution-** West Yorkshire makes a low contribution to the overall supply of construction aggregates within the Yorkshire and Humber Region, despite being a major aggregate consumer, particularly in relation to sand and gravel and high specification crushed rock aggregates.
- iii. **Sand and gravel significant shortfall-** Reserves and production of sand and gravel are at a **critically low level** within West Yorkshire. The landbank is at a level which indicates that the release of new reserves is required. The industry have noted that there is a national shortage and that it is of significant concern.
- iv. **Crushed rock landbank includes mainly lower specification material-** Crushed rock reserves remain relatively high within West Yorkshire; however, a substantial proportion of the currently permitted reserves are unsuitable for higher specification uses, such as for the manufacture of concrete or as roadstone.
- v. **West Yorkshire remains very reliant on neighbouring Mineral Planning Authorities-** To meet the majority of its aggregate needs, particularly for uses which demand higher specifications, West Yorkshire remains reliant on aggregate imports, primarily from quarries in the administrative areas of the Yorkshire Dales National Park Authority and Derbyshire.
- vi. **For road surfacing West Yorkshire remains strongly reliant on aggregate imported the Yorkshire Dales National Park-** To meet its needs for aggregate suitable for use as skid resistant road surfacing, West Yorkshire remains strongly reliant upon supplies of high specification (high Polished Stone Value) sandstone aggregates from quarries in the Yorkshire Dales National Park.
- vii. **Sustainable opportunities to increase aggregate supply in West Yorkshire-** Notwithstanding the extent of the crushed rock aggregate landbank, given West Yorkshire's reliance on adjoining authorities for higher specification aggregates, any sustainable opportunities to increase the supply of the generally lower specification aggregates produced within West Yorkshire should be considered upon their merits, particularly where such proposals would facilitate the indigenous production of building materials such as artificial stone products.
- viii. **Increase Recycled Aggregates-** Providing new and enhanced facilities for the production of recycled aggregates will assist in WY contribution to aggregate production & help to compensate for West Yorkshire's reliance on primary aggregates quarried from neighbouring authorities.
- ix. **Building Sand from Sandstone Quarries-** Production of sand from crushed rock at sandstone quarries in West Yorkshire, including building stone quarries, is a valuable additional/ alternate source of sand supply, particularly building sand.
- x. **Safeguarding Existing and Developing New Rail Sidings and Wharves-** Existing rail and wharf infrastructure should be safeguarded and potential new locations for aggregate wharves and rail depots should be identified within West Yorkshire to facilitate the sustainable transportation of both land won and marine aggregates into West Yorkshire by train and barge (particularly crushed rock from the Yorkshire Dales and marine aggregates landed at the Humber Docks). There is also current industry interest in utilising waterways to transport minerals internally within West Yorkshire – which should be supported. Removing HGVs from the road network to these transport modes would significantly improve Air Quality.

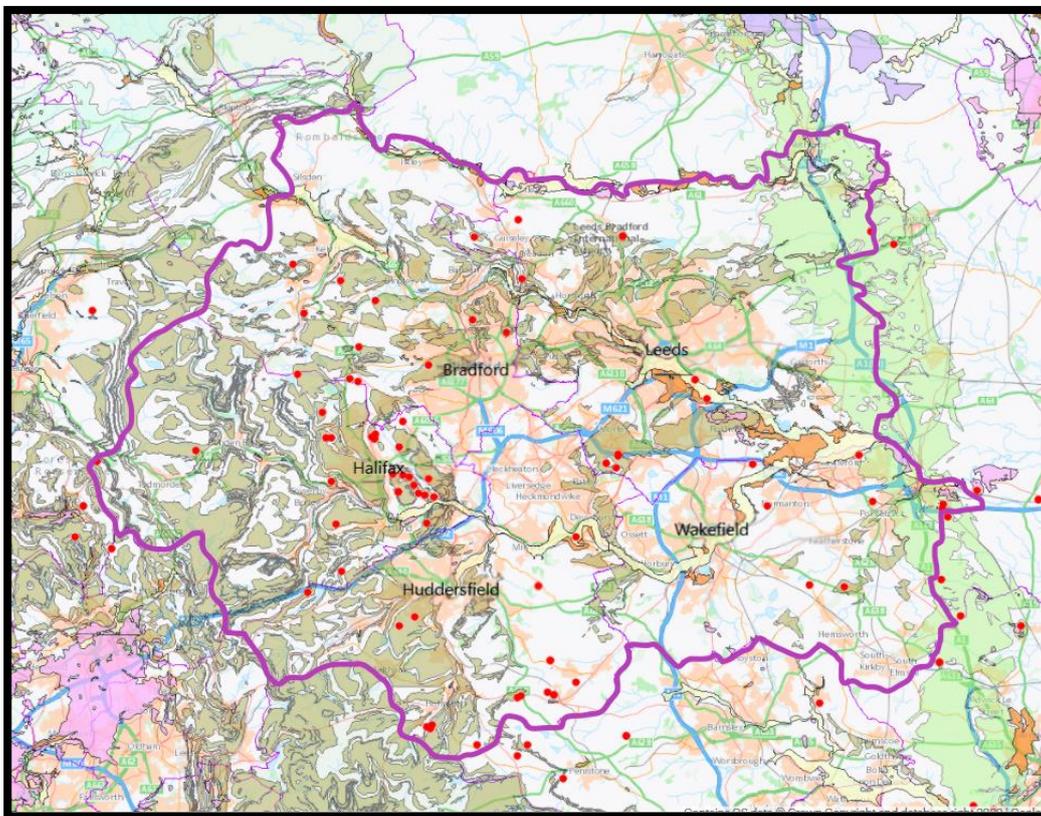
# 1. INTRODUCTION/ BACKGROUND

## 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 construction aggregates is particularly vital to the economic wellbeing of the country and therefore the English planning regime provides for a managed aggregate supply system based upon Local Aggregate Assessments (LAAs).
- 1.1.2. According to the requirements of the National Planning Policy Framework (NPPF), all of the local authorities within England which have responsibilities for minerals planning (Mineral 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, to forecast future demand, 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);
  - 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. 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.
- 1.1.4. 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, updated in May 2017. Although non-statutory this document sets out good practice and provides a useful health check to ensure the robustness of an LAA.

- 1.1.5. This LAA document has been prepared in accordance with the guidance referred to above and represents the seventh annual LAA undertaken by the West Yorkshire Combined Authority on behalf of the five West Yorkshire Local Authorities: Bradford, Leeds, Wakefield, Kirklees and Calderdale. Each of the five West Yorkshire Authorities are Unitary Planning Authorities, who are independently responsible for Minerals Planning in their respective parts of the West Yorkshire sub-region.
- 1.1.6. 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 and informing planning application assessments.
- 1.1.7. 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, has a role in monitoring the operation of the LAA system through providing technical advice. A draft version of the West Yorkshire Local Aggregates Assessment 2021 will be submitted to the AWP for consideration and scrutiny. Following stakeholder consultation and the implementation of any necessary amendments, the LAA will subsequently be presented to the Place, Regeneration and Housing Committee for ratification.

**FIG. 1 Mineral Resource Map of West Yorkshire** (brown: sandstone; yellow/ orange: sand and gravel; green: limestone)



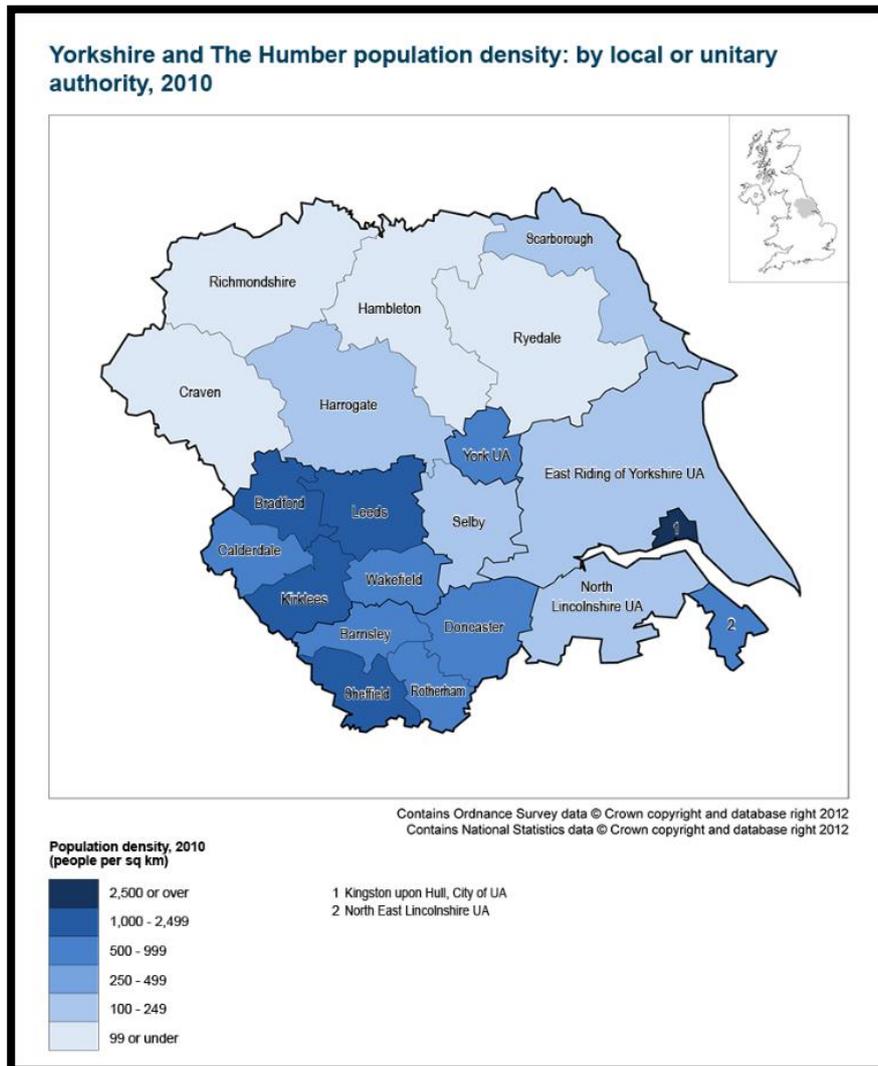
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<sup>2</sup> BGS, 2021, GeoIndex Onshore: Available Online: <http://mapapps2.bgs.ac.uk/geoindex/>

## 1.2. Geographical Context

1.2.1. West Yorkshire is located in the north of England in the Yorkshire and Humber Region. West Yorkshire is heavily urbanised accommodating 2.3 million people (42% of the 5.5 million population of the Region) within 13% of the Region's total land area. Figure 2 below is a population density map produced by the Office of National Statistics which illustrates the high population density in West Yorkshire relative to other parts of the Region.

**FIG2 – Population Density Map**



1.2.2. South Yorkshire has many geographical similarities with West Yorkshire; however North and East Yorkshire contain much lower levels of urban development, but with consequently increased open countryside and accessibility of mineral resources. In terms of administrative areas, the Yorkshire and Humber Area is largely covered by Unitary Planning Authorities, each solely responsible for Minerals Planning within their administrative areas, with the exception of the administrative area covered by North Yorkshire County Council. However, the government has recently announced its intention to make North Yorkshire into a single Unitary Authority which would amalgamate the County Council with the current seven Borough Councils.

1.2.3. The Office of National Statistics estimates that in 2020 West Yorkshire had a population of 2,342,000 and that by 2043 West Yorkshire's population will have increased by approximately 170,000 to 2,509,000, an increase of 7%<sup>3</sup>. Please note that this estimated population increase is a forecast released by the ONS in March 2020 based upon 2018 data and has been revised up by C. 40,000 persons from the previous estimates based upon 2016 data. A more detailed table of population data is presented below:

**TAB1 – 2018-based subnational principal population projections for local authorities in England**

Figures in thousands (to one decimal place)							
AREA	2020	2025	2030	2035	2040	2043	% Increase 2020 to 2043
England	56,678,470	58,060,235	59,181,798	60,183,914	61,157,868	61,744,098	9%
West Yorkshire	2,342,186	2,384,880	2,422,807	2,456,592	2,489,022	2,509,379	7%
Bradford	540,909	547,333	551,918	556,691	562,645	566,537	5%
Calderdale	210,958	212,645	213,676	214,808	216,463	217,548	3%
Kirklees	441,772	447,671	452,340	456,556	461,132	464,258	5%
Leeds	795,565	806,609	819,468	829,842	837,250	842,176	6%
Wakefield	352,983	370,623	385,405	398,696	411,532	418,860	19%

1.2.4. The substantial predicted growth in population in West Yorkshire over the next 20 years and the associated household formation will inevitably create the need for new homes, employment opportunities and improvements in transportation and other infrastructure. The purpose of the planning system is to facilitate and shape this growth in accordance with the principles of sustainable development. This includes planning for adequate and sustainable supplies of the construction aggregates which will be required to deliver the growth.

1.2.5. The consequence of local/ regional sources of construction aggregates being insufficient to meet future demand could include construction material supply failures and delays, construction costs increases and increase in aggregate haulage distances. It is therefore crucial that a sufficiency of minerals is identified to supply the construction industry with the materials required to deliver the substantial housing and economic growth planned in West Yorkshire over relevant plan periods.

1.2.6. Given its mineral 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, minerals 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.

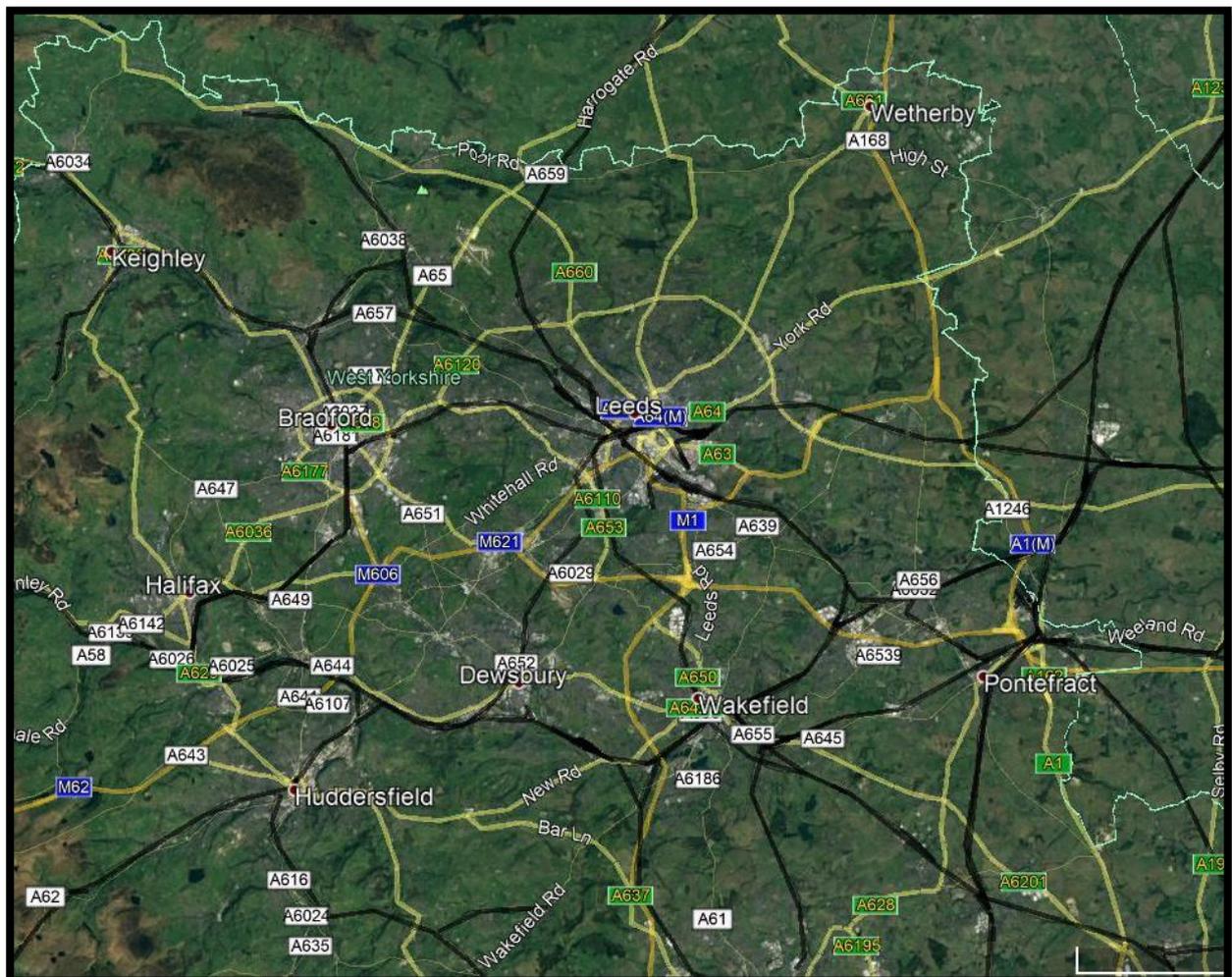
<sup>3</sup> ONS, 24 March 2020, Table 2: 2018-based subnational principal population projections for local authorities and higher administrative areas in England

### 1.3. Transportation of Aggregates (General)

1.3.1. The M62 motorway and trans-Pennine railway line provide east west transportation links between West Yorkshire, East Yorkshire and Manchester/ Liverpool. The M1/ A1(M) and the east coast mainline provides north-south links between West Yorkshire and York, Newcastle and the wider North-West Region to the north and Sheffield, Derbyshire, Nottinghamshire, London and the South-East to the south. The Settle Carlisle railway also provides rail-freight connectivity to North Yorkshire and the Yorkshire Dales – with several Yorkshire Dales Quarries being rail connected and transporting a significant proportion of their output by rail haulage.

1.3.2. The primary national road and rail corridors relevant to West Yorkshire are illustrated in Fig. 3 below, with navigable waterways illustrated in Fig. 4. Essentially these maps illustrate that West Yorkshire is extremely well connected, both internally and to surrounding areas, by road, rail and waterway (albeit there are capacity limitations and a need for further investment to realise the full potential of various routes/ modes of transportation):

**FIG3 – Map Illustrating Key Road & Rail Corridors (black: rail; yellow: road)**



<sup>4</sup> Google Earth, 2021

**FIG4 – Map of navigable waterways**



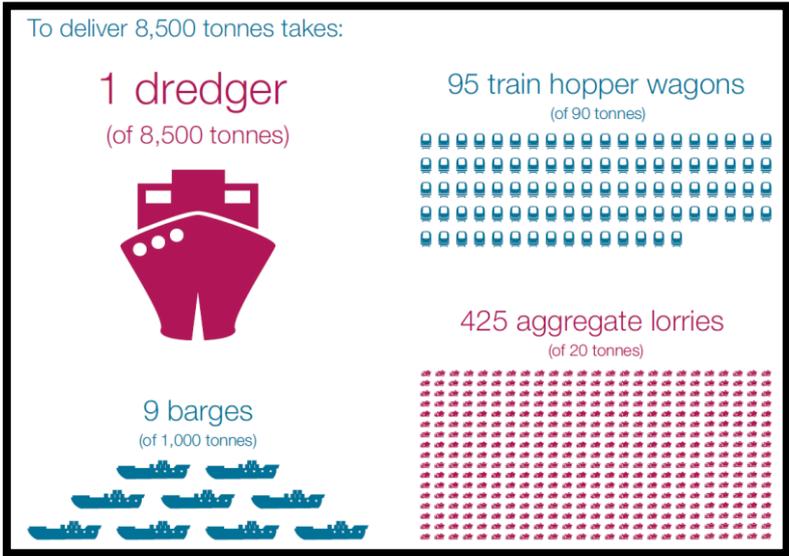
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- 1.3.3. Commercial canal/ waterway connectivity and associated wharf infrastructure remains in place to the east of Leeds, allowing waterway commerce connections between West Yorkshire and the Humber Docks via Goole. Although the Leeds-Liverpool canal remains well used for leisure traffic the infrastructure is not currently in place to allow similar commercial waterway goods transportation between West Yorkshire and Manchester/ Liverpool to the west. The Aire and Calder and associated navigations provide a further option for aggregate waterway freight between Wakefield, Leeds and Dewsbury/ Brighouse.
- 1.3.4. A recent planning application for a new sand and gravel quarry within the Wakefield District proposes exclusive minerals transportation via barge, with minerals proposed to be distributed to Leeds and/ or Dewsbury. The proposed routes are to either barge sand and gravel east and north to Leeds via the Aire and Calder Navigation and canalised sections of both the River Calder and the River Aire or to barge the minerals south and west, via the canalised sections of the River Calder and both the Aire and Calder and Calder and Hebble navigations, to the Newlay minerals processing and construction materials manufacturing plant in Ravensthorpe near Dewsbury. It is understood some investment in wharf and lock infrastructure would be required to open up both routes.
- 1.3.5. However currently the vast majority of aggregate is distributed within or arrives in West Yorkshire by road based heavy goods vehicles and issues associated with the transportation of minerals by road are frequently one of the main causes for community concern in relation to minerals development. 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 and issues associated with poor air quality.

<sup>5</sup> C&RT, 2021, <https://canalrivertrust.org.uk/enjoy-the-waterways/canal-and-river-network>

- 1.3.6. The West Yorkshire Low Emissions Strategy 2016 to 2021 (LES) confirms that ‘in some parts of West Yorkshire ... road traffic is having a significant impact on air quality’ and that ‘the number of HGVs on the West Yorkshire road network contribute significantly to local and regional air pollution’. The West Yorkshire Transport Strategy 2040 Transport Plan further advises that:
- 61million tonnes of freight arrives into West Yorkshire annually;
  - 54 million tonnes are exported (2010);
  - 93% of goods are transported by road, only 7% by rail;
  - Heavy goods vehicles account for only 5% of vehicles on our roads but 30-45% of air pollution from road transport in UK urban areas.
- 1.3.7. The BGS estimate that in 2019 2,723,000 tonnes of aggregates were imported into West Yorkshire, as set out in table TAB15 of this report, with the majority being by road transport. Consequently, and given the acknowledged disproportionate contribution which road freight transportation makes to air pollution, it is clear that reducing aggregate road freight movements, by shifting an increasing proportion of aggregate freight transportation onto rail and waterways and off roads, would be likely to make a significant contribution towards tackling air quality problems in West Yorkshire in accordance with the West Yorkshire Low Emissions Strategy.
- 1.3.8. Furthermore achieving improved modal shift for aggregates transportation onto rail and waterway could help mitigate the additional logistical and costs constraints upon HGV mineral haulage which will result from the Clean Air Zones to be introduced in a number of cities in the Region suffering from poor Air Quality including Leeds and Bradford. Significant greenhouse gas emissions reduction benefits would also accrue from aggregate transportation modal shift, with carbon emissions from barges estimated to be ten-times lower than HGV emissions (per payload tonne)<sup>6</sup>. The diagram below, produced by the Crown Estate, illustrates the efficiency benefits of achieving modal change for aggregate transportation:

**FIG5 – Illustration of haulage capacity of different modes of transportation**



7

<sup>6</sup> Data from EU Inland Waterway Transport Solutions 2.0 website, accessed 2021: <https://project-iwts20.eu/>  
<sup>7</sup> The Crown Estate, Marine Aggregates Capability & Portfolio 2018

## **1.4. Transportation of Aggregates (Barge)**

- 1.4.1. Currently only a relatively limited amount of aggregate is transported to/ within West Yorkshire by barge. The known current activity comprises a single operator barging marine dredged sand and gravel into Leeds (Knostrop Wharf) at a rate of approximately 75,000 tonnes per annum of material. However, industry have advised of the potential to substantially increase the quantities of aggregate barged into West Yorkshire utilising existing unused commercial wharf infrastructure in Leeds and Wakefield. Lack of wharf availability is a major barrier to this expansion occurring - highlighting the key importance of safeguarding existing wharfs from alternative uses/ potentially sterilising development.
- 1.4.2. Additionally, the Canal and River Trust have obtained planning permission to construct a new aggregate wharf facility at Stourton (Leeds) and estimate that the initial capacity of this facility would be approximately 200,000 tonnes of aggregates per year. One of the purposes of this facility is to facilitate the water borne transportation of marine won aggregates landed at the Humber into West Yorkshire. This would allow increased access of marine aggregates into the West Yorkshire market through a transportation option which has a lower environmental cost than HGV haulage.
- 1.4.3. Outside of Leeds aggregate wharf infrastructure is more limited, following the 2013 closure of the Lafarge wharf at Whitwood (Wakefield). This wharf previously received sand and gravel barged up from the Trent. Lafarge indicated that the closure was due to their merger with Tarmac, which gave them access to more local quarries to supply their concrete works. It is understood that there is industry interest in utilising this wharf again to barge C. 150,000 tonnes p.a. of marine won sand and gravel from the Humber; however it is unknown whether there are availability or deliverability constraints to re-opening this wharf for aggregate landings. Re-opening the Whitwood Wharf has the potential to significantly enhance the distribution of marine won sand and gravel into West Yorkshire outside of Leeds and is explicitly supported within Wakefield's emerging new Local Plan (LP2036) through draft policy WSP18(3)(b).
- 1.4.4. Additionally, a sizeable wharf is known to remain adjacent to the former Ferrybridge Power Station coal stockyard. The coal stockyard is also served by a rail loop/ sidings, with rail sidings also running to the two operational energy from waste facilities to the west of the stockyard. The wharf and rail loop were in the past utilised to transport large quantities of coal to the Power Station and the rail loop continues to be utilised by a plasterboard manufacturer (Etex) to rail in gypsum. This remaining, currently under-utilised, rail and waterway infrastructure has obvious potential to be re-used to provide an intermodal commercial freight transportation facility (including potentially aggregates). The power station is currently under demolition and the coal stockyard is redundant - releasing over 150 hectares of potential employment development land. Safeguarding both the wharf and rail infrastructure as part of any redevelopment proposals is essential to keep open the option of developing new rail waterway connected employment facilities in this location.

- 1.4.5. Existing navigable waterway infrastructure is thought to be sufficient to allow for a certain level of expansion of aggregate freight movements into West Yorkshire. However, if waterway transportation of aggregates were to be expanded very substantially (into millions of tonnes per annum levels) the Canal and River Trust have advised that infrastructure investment would be required. The infrastructure improvements likely to be required would include M&E equipment upgrades, lock widening and lifting bridges. No funding source for these infrastructure improvements has yet been identified.
- 1.4.6. As discussed more extensively in Section 4.4 of this report, the Canal & River Trust's 'Inland Waterway Transport Solutions' (IWTS) project has looked in more detail at the constraints on the marine transportation route between Leeds and the Humber. The project aims to remove bottlenecks in terms of lock capacities, etc, and to consequently increase the size of ship that can access Leeds and the amount of freight that can be carried by this mode of transportation (including aggregate). The Canal and River Trust have indicated that the scope of works which would be required to 'create a new coherent, feasible, more viable and more resilient transport option between the northern cities, the Humber and Europe' would include:
- Construction of new wharves;
  - Minor channel dredging;
  - Enhancements to Bulholme and Castleford Lock, and;
  - Improvements to air draft at a number of key bridges<sup>8</sup>.
- 1.4.7. Transportation of aggregate by barge on inland waterways has an obvious significant potential to improve the sustainability of the West Yorkshire aggregate distribution system. This is particularly in terms of marine aggregate distribution connectivity between Leeds and the Humber, but also in terms of movement of minerals between quarries connected to the waterway network and construction materials manufacturing and distribution facilities. A recent example is a planning application for the development of a new sand and gravel quarry in Wakefield which proposes exclusive waterway transportation of extracted mineral and is reliant upon access to suitable wharf facilities in Leeds to deliver of the project. Facilitating and investing in the required improvements and adjustments to the existing waterways, locks and wharfs to unlock the potential of waterway distribution should consequently be seen as a key priority for West Yorkshire.
- 1.4.8. It is also important for Local Authorities to highlight the potential importance of this mode of aggregate transportation within relevant plans and strategies and to safeguard land and infrastructure which could be required to facilitate the enhancement of the inland waterway network and wharf facilities within Local Plans. Close engagement with the Canal and River Trust (CRT) and industry stakeholders will be important in this regard. Table 2 and Figure 6 overleaf set out the currently available information on aggregate wharf sites and their capacity based upon information provided by the CRT, Leeds CC and industry stakeholders.

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<sup>8</sup> ICE – NATIONAL NEEDS ASSESSMENT, RESPONSE BY THE CANAL & RIVER TRUST, 04 March 2016

FIG6 – Location of Safeguarded/ Known Aggregate Capable Wharfs



**TAB2 – Tabulated Estimates of Actual Wharf Aggregate Throughput & Potential Capacity**

<b>Wharf</b>	<b>Estimated Current Aggregate Throughput (Tonnes Per Annum)</b>	<b>Potential Capacity (Tonnes Per Annum)</b>
Old Mill Lane, Knostrop	75,000	150,000
Bridgewater Road, Cross Green	-	Unknown
Skelton Grange Road, Stourton (Port of Leeds)	-	1,000,000
Haigh Park Road, Stourton	-	Unknown
Fleet Lane, Woodlesford	-	Unknown
Whitwood	-	156,000
<b>C&amp;RT Estimate of Total Potential Aggregate Capacity of Aire &amp; Calder Navigation Wharfs (Subject to Infrastructure Improvements)</b>	<b>2,000,000</b>	

## **1.5. Transportation of Aggregates (Rail)**

- 1.5.1. The adopted Yorkshire Dales National Park Local Plan seeks a 50% (minimum) reduction in road traffic from quarries in the National Park. If West Yorkshire is to continue to rely extensively on aggregate extracted from quarries in the Yorkshire Dales National Park. Crushed rock limestone is transported by train from Buxton (Derbyshire) to Stourton (Leeds) and from Dry Rigg, Acrow, Ingleton and Swinden Quarries to Cross Green (Leeds). The two aggregate offloading facilities at Cross Green are operated by Tarmac and Hanson the Stourton facility is operated by Cemex.
- 1.5.2. It is also understood that some aggregate and cement is brought by rail to the Construction Materials plant at Bretton Street in Dewsbury. All these terminals also distribute aggregate by road to other local sites; however, a large proportion of the total road haulage distance is taken out by the railing of aggregates into West Yorkshire to these locations - with consequent climate change and air quality benefits.
- 1.5.3. Leeds City council had stated that the Cemex aggregate rail depot in Leeds could have been lost due to the impact of HS2 and additional rail aggregate offloading infrastructure in Leeds would have been required to compensate for this capacity reduction. A site has been allocated in Leeds to provide additional rail offloading capacity however, evidence indicates that irrespective of the loss of the eastern leg of HS2 and the allocation of this site, there will remain a shortfall in aggregate rail offloading capacity to serve West Yorkshire.
- 1.5.4. In addition, interest has recently been expressed in utilising a rail connected site off Wheldon Road (Castleford) as an aggregate rail depot. Although the site is constrained by its location within a Housing Zone where the delivery of over 4,000 new houses is proposed, the rail depot is referenced in the current land allocation and the site has already been partly prepared under a planning consent by the laying down of a suitable hardstanding. At the time of writing this report no firm information is available on whether this potential new aggregate rail depot will be brought forward or not.
- 1.5.5. It is therefore essential, that the existing rail depots are retained, and potential new sites are safeguarded. Currently the distribution of aggregate into West Yorkshire by rail is limited by the capacity and uneven geographical spread of active aggregate capable rail depots. This is discussed in more detail in Section 4.5 of this report.

## 1.6. Transportation of Aggregates (Infrastructure Safeguarding)

1.6.1. In recognition of the importance of maintaining existing minerals rail and waterway transportation infrastructure and promoting any further opportunities to move minerals off public roads, Leeds' Natural Resources and Waste Local Plan includes policies which safeguard existing and potential rail sidings and several existing and potential wharf sites. However, challenges have been experienced in relation to the implementation of this policy due to competing pressures for housing development.

1.6.2. This challenge has arisen because the Leeds policy allows for safeguarded sites to be used for alternate development if it can be demonstrated that the site is unlikely to be used for freight purposes. This issue of safeguarded rail and waterway transportation infrastructure being threatened by alternative development proposals may be exacerbated by the new national planning policy guidance set out in section 11 of the revised NPPF. This revised guidance puts a strong emphasis upon the benefits of building upon previously developed and under-utilised land and advises that, where the local planning authority considers there to be no reasonable prospect of an application coming forward for the use allocated in a plan, applications for alternative uses on the land should be supported, where the proposed use would contribute to meeting an unmet need for development in the area.

1.6.3. Within Bradford's adopted Local Plan Core Strategy Policy TR6: Freight 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 facilities.*

1.6.4. The Calderdale Local Plan Submission Draft confirms that, given the geography and current physical infrastructure of Calderdale, alongside the nature of the local quarrying industry, it is not intended to safeguard the transport element of the minerals supply chain. However, a general minerals infrastructure safeguarding policy for Calderdale is proposed through draft policy MS3.

1.6.5. The Wakefield Local Development Framework Core Strategy policy CS9 includes a general policy for the safeguarding of rail and waterway infrastructure through policy CS9 which states that: *Sites which are used or suitable for inter-modal transfer facilities, rail freight facilities and the loading and unloading of water-borne freight will be protected for these uses and water and rail freight connections to existing industrial sites will be retained wherever possible and the development of new inter-modal transfer facilities, new rail sidings and rail freight facilities and new wharves will be encouraged.*

1.6.6. The Kirklees Local Plan safeguards several specific minerals transportation facilities through policy LP39 including: a former coal and aggregates depot and a cement depot with rail spurs in Bretton Street, Dewsbury and a former Coal Wharf on the Calder & Hebble Navigation.

## 1.7. National Parks and Areas of Natural Beauty

- 1.7.1. The NPPF indicates that when determining planning applications, local planning authorities should, as far as is practical, provide for the maintenance of landbanks of non-energy minerals from outside National Parks. 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.
- 1.7.2. Nonetheless it is known that West Yorkshire does receive significant quantities of crushed rock aggregate from quarries within the Yorkshire Dales National Park (YDNP), including high specification aggregates, and also receives aggregate quarried within the Nidderdale Area of Natural Beauty (AONB). Recently published British Geological Survey data indicates that, of the 2.3 million tonnes of crushed rock estimated to have been consumed within West Yorkshire in 2019, in the region of 1.3 million tonnes (55%) was sourced from quarries within the Yorkshire Dales National Park (see section 4.1 below).
- 1.7.3. 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. Moreover, the adopted Yorkshire Dales National Park Local Plan proposes to restrict the development of new crushed rock quarries or the extension of existing quarries into areas of undisturbed land other than in exceptional circumstances. However very significant reserves exist in the YDNP capable of continuing to supply markets at existing rates for many years. Reserves have also recently been further bolstered through the approval of a planning application by Tarmac to deepen the rail connected Swinden Quarry - which would add approximately 11 million tonnes to the existing 30 million tonne reserve of carboniferous limestone (not high specification material).
- 1.7.4. Lesser, but still significant quantities of crushed rock aggregates are transported into West Yorkshire from limestone and gritstone quarries within the Peak District National Park. The Peak District Local Plan Core Strategy imposes a still tougher planning policy framework for new and extended minerals workings. Policy MIN1 confirms that proposals for new mineral extraction or extensions to existing mineral operations (other than fluorspar proposals and local small-scale building and roofing stone) will not be permitted other than in exceptional circumstances. The most recent Local Aggregates Assessment covering the Peak District (2020)<sup>9</sup> confirms that the purpose of this restrictive policy is to provide for a continued gradual reduction in the amount of mineral that is quarried from within the National Park, in order to protect the nationally important landscape.

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<sup>9</sup> Derbyshire County Council, Derby City Council And the Peak District National Park Authority Local Aggregate Assessment 2020

1.7.5. In the longer-term alternative resources may therefore be required to supplant the significant quantities of aggregates supplied into West Yorkshire from quarries located in Yorkshire Dales National Park. If new resources are not identified, there is a risk that supplies of aggregates into West Yorkshire, and in particular high specification aggregates, may not be maintained at satisfactory levels in the mid to long term, as existing National Park permitted reserves are exhausted. The high specification sandstone aggregate produced within the Yorkshire Dales National Park is of a quality which cannot be produced within West Yorkshire or any other existing established significant sources of supply into the West Yorkshire market. This issue is discussed further in Section 1.9 below.

## 1.8. West Yorkshire Local Plans

- 1.8.1. Having a robust Local Aggregate Assessment in place is a pre-requisite to arriving at sound minerals planning policies and to enable the delivery of policies to be accurately monitored and updated. 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 but have agreed to jointly produce a Local Aggregates Assessment to inform their plans.
- 1.8.2. The five West Yorkshire authorities are at different stages of plan making with Leeds, Wakefield, Kirklees and Bradford having some up-to-date Local Plan documents relevant to minerals planning in place – Leeds, Bradford and Wakefield’s adopted plans being in the format of a multi document Local Development Framework. Leeds have also completed a partial review of its Local Plan Core Strategy - mainly related to a need to adjust policies and proposed land allocations to reflect the implications of the new household growth forecasts and new methodology for calculating housing need.
- 1.8.3. Leeds and Bradford are now in the process of preparing new format single Local Plans - with Leeds at the initial scoping stage and Bradford at the Preferred Options stage. Both Calderdale and Wakefield have submitted new format single Local Plans for Examination. Kirklees have a new format single Local Plan adopted. Tab 3 below provides further detail on relevant adopted and emerging local plan documents and associated housing targets:

**TAB3 – Most Up-To Date LA Local Plan Documents which Include Housing Delivery Targets**

District	Document	Stage	Date of Document	Planned Housing Delivery	Plan Period Start	Plan Period End	Plan Years	Annual Housing Delivery Target
<b>Leeds</b>	Core Strategy Selective Review	Adopted	Sep-19	54,352	2017	2033	16	3,397
<b>Bradford</b>	Bradford District Local Plan	Draft	Feb-21	30,672	2020	2038	18	1,704
<b>Kirklees</b>	Local Plan	Adopted	Feb-19	31,140	2013	2031	18	1,730
<b>Wakefield</b>	Local Plan	Draft	Oct-20	26,600	2017	2036	19	1,400
<b>Calderdale</b>	Publication Draft Local Plan	Draft	Aug-18	12,600	2018	2033	15	840

- 1.8.4. The effect of the (generally downward) revisions to household growth forecasts for West Yorkshire, coupled with the changes to government guidance on the correct methodology to be adopted by planning authorities in order to calculate housing need, means that the new and updated Local Plans which are being prepared by West Yorkshire Local Authorities are generally planning for the delivery of a lower number of new homes than is the case for current adopted plans.

- 1.8.5. The combined total annual housing delivery target for West Yorkshire, as set out in currently emerging Local Plans, has reduced by approximately 2,000 dwellings (18%). The reduction is from 11,120 dwellings per annum in adopted (pre-review) plans to 9,070 dwellings per annum in post review Core Strategies and emerging replacement Local Plans. The selective reviews in the Leeds and Bradford Core Strategies resulted in the largest reductions in planned housing growth.
- 1.8.6. Previous versions of the WYLAA have adopted the approach of planning for increases in future aggregate provision in-line with planned increases in housing delivery. This approach is considered to remain valid. However the generally lower housing delivery targets, together with the improving trend in actual housing delivery in West Yorkshire, means that the gap between actual and planned housing delivery is reduced and consequently the level of uplift to be applied to the 10 year aggregate sales average is lower. As discussed in Section 4.6 of this report this has resulted in a progressive reduction in the uplift factor to be applied to the WYLAA 2021 landbank to 22% from 25% in the WYLAA 2019, 27.5% in the WYLAA 2018 and 35% in the WYLAA 2017.
- 1.8.7. In addition to the planned housing growth, and the local infrastructure upgrades which will be required to facilitate this growth, West Yorkshire is also planning for significant growth in employment facilities. This is reflected in the substantial additional Employment Sites being planned within the new Local Plans and is also currently visibly manifested in the large number of 'big box' B8 warehouse units either recently completed, under construction or in the planning pipeline in West Yorkshire. In some instances, the planned level of future employment growth is over and above the level of growth which has been delivered within previous plan periods. Additionally, a range of large infrastructure projects are in the pipeline including Mass Transit for West Yorkshire, Northern Powerhouse Rail and associated Rail Interchange upgrades.
- 1.8.8. It is acknowledged that the additional employment growth and infrastructure projects referenced above will require substantial quantities of construction aggregates which are likely to be in excess of the historic annual production rates captured through 10-year average sales figures. It is further acknowledged that uplifting 10 year sales averages to take account of forecast increases in house building is unlikely to fully capture the increased level of demand which will be generated by the planned increased employment growth in some parts of West Yorkshire together with the one off infrastructure projects in the pipeline. There is currently not considered to be any robust methodology to accurately predict the additional aggregate need which the planned increased employment growth and one-off infrastructure projects is likely to result in. However, this area will be reviewed in the next LAA and consideration given to whether it would be possible to adjust the uplift methodology to better take account of these factors.
- 1.8.9. In terms of the minerals planning content of West Yorkshire Local Plans, the minerals related policies of the Leeds Local Plan are set out in their Core Strategy and Natural Resources and Waste Local Plan. The minerals

planning framework set out in these documents includes a number of minerals site allocations for proposed new extraction areas and the safeguarding of existing resources and infrastructure and also includes criteria based policies for assessing applications for new minerals sites and non-minerals development on safeguarded minerals resources.

- 1.8.10. Through Policy MINERALS 5, the Leeds Natural Resources and Waste Local Plan, adopted on 16th January 2013, allocates an extensive Area of Search for Sand & Gravel in the area south of Leeds, around Methley, and also allocates land at Midgley Farm in Otley for Sand & Gravel extraction. This is upon the basis that previous relatively recent commercial extraction activity and minerals industry enquiries indicate that there are likely to be economically viable sand and gravel resources remaining within this area. Furthermore, the landscape in this area is not considered to be so sensitivity that the principle of further extraction would be precluded.
- 1.8.11. However, unfortunately, despite the positive minerals planning policy environment for sand and gravel extraction within these areas set out within the Leeds Local Plan, the previous commercial interest in further undertaking further sand and gravel extraction has not been progressed to fruition. Considering the general concern regarding the availability of land won sand and gravel resources within the Region the lack of interest in further sand and gravel extraction in the allocated areas around Otley and Methley is surprising. Further discussion with minerals industry representatives in relation to this issue may be beneficial to enable a better understanding of the factors which have impeded progress.
- 1.8.12. The Leeds Natural Resources and Waste Local Plan takes a different approach to the extraction of sand and gravel in the Wharfe Valley in the area east of Pool, given the area's high landscape sensitivity. Consequently, Policy MINERALS 6 states that it is unlikely the Council will support proposals for further sand and gravel extraction within this area. 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.
- 1.8.13. The adopted Leeds Core Strategy Selective Review alters the following main parts of their Core Strategy:
  - Reduction in the amount of housing land to be allocated from land sufficient to accommodate 54,352 dwellings (gross) to land sufficient to accommodate 46,352 dwellings (gross) (15% reduction);
  - Reviewing the housing distribution in SP7, and extending the Plan period to 2033;
  - Introducing new policy on housing standards with minimum space standards, and accessibility standards for new housing in policies H9 and H10;
  - Updating policy and requirement on affordable housing by amending Policy H5;
  - Reviewing the requirement for greenspace in new housing developments by amending Policy G4;

- City Centre Green Space, making minor amendments to Policies G5 and G6;
  - Incorporating new national policy regarding Code for Sustainable Homes by updating the wording of Policies EN1 and EN2 and a consequential change to EN4;
  - Introducing a new Policy for Electric Vehicle Charging Infrastructure (EN8).
- 1.8.14. Wakefield adopted a Local Development Framework in 2009, with a series of Development Plan Documents informed by a Core Strategy. The Wakefield Core Strategy sets out a commitment to maintaining an appropriate contribution towards the regional supply of aggregates and safeguards mineral resources including the Magnesian Limestone resource in the Knottingley and Darrington area and existing permitted reserves throughout the District. The Site Specific Policies DPD provides for the safeguarding of further minerals deposits, including clay resources in Normanton and Sand & Gravel Resources in Horbury and Stanley Ferry, as well as parts of the coalfield.
- 1.8.15. Wakefield have now submitted a replacement *Wakefield Local Development Plan 2036* for examination. The Local Plan will cover the period to 2036 and will provide a comprehensive, updated planning framework of policies, site allocations and designations. The level of housing growth being planned for within the Wakefield District Local Plan 2036 is reduced by 12% (200 houses per annum) from the previous plan. Minerals policies remain substantially unchanged.
- 1.8.16. Bradford Council's Local Plan Core Strategy, which includes minerals policies, was formally adopted by the Council in July 2017. The Core Strategy includes criteria-based policies for assessing new minerals planning applications and defining a minerals area of search. The policy environment depicted is broadly supportive of building stone quarrying and sand & gravel extraction, subject to specified environmental criteria being met. The quarrying of primary aggregates is only generally undertaken in Bradford as a by-product of building stone quarrying and the Bradford Core Strategy is also broadly supportive of the continuation of aggregate production at building stone quarries, particularly where building sand would be produced.
- 1.8.17. The Bradford Core Strategy also includes a minerals safeguarding policy, identifying the broad extent of the Sandstone, Sand & Gravel and Coal resources which are to be safeguarded from non-minerals surface development. However, the Bradford Core Strategy recognises the constraint on development which would result from an all-encompassing approach to minerals safeguarding, given the extent of the minerals safeguarding areas, particularly in relation to sandstone and the urban coalfield. Consequently, the Bradford minerals safeguarding policy includes a range of exceptions and focuses on facilitating prior extraction of minerals, rather than constraining development.
- 1.8.18. Bradford Council are in the early stages of producing a replacement Local Plan. In relation to housing growth, the new Local Plan proposes a reduction

in the number of new homes which the plan will provide for from 42,100 in the pre-review Core strategy to 30,672 in the Local Plan Preferred Options document. This represents a reduction in the number of new dwellings planned to be built within the Bradford District over the plan period of 27% but remains a substantial level of growth with consequent minerals supply needs. The emerging Bradford Local Plan retains a broadly similar planning framework for minerals which commits to maintaining adequate landbanks of minerals and is generally supportive of building stone quarrying and ancillary aggregate production (which is the predominant form of minerals extraction in Bradford).

1.8.19. Following successful Examination in Public the new Kirklees Local Plan was adopted in February 2019, setting out a policy framework for assessing applications for new minerals development based upon a range of criteria relating to the protection of people and the environment. The policy framework is also generally supportive of local building stone quarrying and commits to contributing towards the maintenance of adequate landbanks of aggregates in West Yorkshire. The Local Plan also provides for safeguarding of minerals and infrastructure and includes a significant number of minerals site allocations, including areas of search, preferred areas and specific extraction and infrastructure sites.

1.8.20. Calderdale Council have also now submitted their new Calderdale Local Plan (June 2018) for Examination in Public. The draft Calderdale Local Plan provides for the allocation of all existing quarries for continued minerals extraction and also proposes the allocation of 2 extensions to a sandstone quarry in Southowram and the safeguarding of a concrete batching plant. The Local Plan also includes a suite of criteria-based minerals policies based around the following stated strategy:

- *The Council along with other Mineral Planning Authorities within West Yorkshire will seek to make an appropriate contribution towards the maintenance of a ten year land bank for crushed rock aggregates as identified through the West Yorkshire Local Aggregate Assessment (LAA);*
- *Extensions to existing mineral workings will be preferred to the opening of new workings, whilst acknowledging that minerals can only be worked where they are found;*
- *The Council will encourage the processing of secondary and recycled aggregates in order to reduce reliance on primary extraction;*
- *The Borough will identify and safeguard known mineral resources of local and national importance to ensure they are not needlessly sterilised by non mineral development;*
- *Proposals for extracting other types of minerals and proposals for the production of recycled and secondary aggregates will be assessed in accordance with national policy and the environmental criteria set out in Policy MS4;*
- *In view of the national importance of the local sandstone resource the Council will seek to encourage producers to maintain reserves at a level of 10 years projected sales;*
- *Applications to reopen disused stone quarries in order to repair historic buildings will be supported where the proposal is in accordance with*

*other Mineral Policies and where it can be shown that such materials cannot be supplied from an existing quarry.*

## **1.9. Other Relevant Local Aggregate Assessments**

- 1.9.1. West Yorkshire has historically been, and remains, 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 the West Yorkshire LAA. This section will therefore summarise the findings of the LAAs produced by Mineral Planning Authorities supplying aggregate into West Yorkshire, as shown in Figure 12.
- 1.9.2. The two most significant LAAs, in terms of the minerals supplied into West Yorkshire, are the LAA relating to the North Yorkshire Sub-region (including the Yorkshire Dales National Park) and the Derbyshire, Derby and Peak District National Park LAA. However also of relevance are the LAAs of Derbyshire, Derby and the Peak District and the Humber Area. LAA relevant to minerals producing authorities within the South Yorkshire area (the Doncaster and Rotherham LAA).

### ***North Yorkshire LAA***

- 1.9.3. The Local Aggregate Assessment for the North Yorkshire Sub-region (NYLAA) covers the administrative areas of North Yorkshire County Council, City of York Council, and the Yorkshire Dales and North York Moors National Park Authorities. First published in January 2013 it has subsequently been regularly updated, with a fifth review document ratified by the Yorkshire and Humber Aggregates Working Party in October 2019.
- 1.9.4. The area covered by the NYLAA has historically been a significant supplier of land won aggregates to surrounding urban areas, including West Yorkshire. The main types of aggregate produced within the NYLAA Area are crushed limestone (Carboniferous, Magnesian and Jurassic), crushed sandstone (Ordovician and Silurian - including High Specification Aggregates (HSA)/ High Polished Stone Value (PSV) aggregate) and sand and gravel (including significant quantities of concreting grade material).
- 1.9.5. All of the sand and gravel produced within the NYLAA Area is derived from the administrative area of North Yorkshire County Council, outside of the National Parks. However almost half of the crushed rock aggregate reserve (48% of the 157 million tonne reserve identified in 2018) is contained within the Yorkshire Dales National Park (YDNP). No aggregate is currently sourced from the North York Moors National Park. All of the HSA/ High PSV aggregate which is produced within the NYLAA Area is quarried from within the YDNP.
- 1.9.6. HSA/ High PSV aggregate is produced from a specific type of sandstone resource which is not available to be quarried elsewhere within the NYLAA Area and is only available from a limited number of sources nationally. The HSA/ High PSV aggregate is primarily used for the manufacture of skid resistant road surfacing asphalt.

- 1.9.7. BGS data associated with the national aggregate monitoring survey 2019 indicates that between 1.2 and 1.4 million tonnes of the aggregate extracted within YDNP in 2019 was consumed within West Yorkshire, representing a very substantial proportion of the total quantity of aggregates extracted from within the YDNP. Tables 12 and 14 of the 5<sup>th</sup> review document confirm that the most important supply market for both crushed rock and sand and gravel supplies extracted within the North Yorkshire LAA is West Yorkshire.
- 1.9.8. The data included within the 5<sup>th</sup> review document confirms that overall crushed rock aggregate reserves for the North Yorkshire Area have declined by 25% between 2009 and 2018 and that the most significant decline has been in crushed rock aggregate reserves within the Yorkshire Dales National Park (which have declined by 29% over this period). The NYLAA does not suggest any figures for future aggregate provision from within the YDNP, due to the particular policies which apply to minerals extraction within National Parks.
- 1.9.9. The Yorkshire Dales National Park Local Plan (adopted December 2016) applies the national planning policy position in relation to the extraction of minerals in National Parks by restricting the development of new crushed rock quarries or the extension of existing quarries into areas of undisturbed land other than in exceptional circumstances. However, the continuity of supplies from existing extraction sites is provided for by allowing extensions, in time, extraction area or depth, in disturbed land within the boundary of an existing active quarry, where specified criteria are met.
- 1.9.10. One such proposal was submitted by Tarmac in January 2017, and was approved in December 2018, for the deepening of Swinden Quarry by approximately 50 metres, to allow the release of a further 11 million tonnes in addition to the existing 30 million tonne reserve of carboniferous limestone. It should also be noted that this site quarries carboniferous limestone, which is primarily used as a concreting aggregate. Therefore, the outcome of the application would not improve the security of supplies of the HAS/ High PSV sandstone resource which is also quarried within the Yorkshire Dales National Park.
- 1.9.11. Additionally, it should be noted that Swinden Quarry does not just supply aggregates to the West Yorkshire market. An increasing proportion of reserves are transported from the site by rail, as required by the Yorkshire Dales National Park Local Plan, which increases the potential to distribute quarried aggregates to more distant aggregate consumption markets. Concerns about the availability of sufficient aggregate rail off-loading facilities in West Yorkshire, as discussed further in Section 4.5 of this report, could potentially affect the extent to which these further reserves are off-loaded in West Yorkshire and feed West Yorkshire construction aggregate demand.
- 1.9.12. In relation to the future availability of HSA/ High PSV aggregates, the NYLAA 5<sup>th</sup> Review assess that that 'although potential future resources of high PSV material are limited by geological conditions at the three existing quarries, it is expected that planning applications will be submitted for additional reserves and/or extended lives at some of these sites at least'.

The 5<sup>th</sup> review document highlights the approval of an application to deepen Arcow Quarry in July 2017 and the recommencement of working of high PSV stone at Horton Quarry in 2017 as examples where opportunities have been taken to enhance supplies of High PSV from existing sites.

- 1.9.13. The NYLAA 5<sup>th</sup> review indicates that ‘At the current level of sales, permitted reserves of high PSV aggregate are sufficient into the mid-term’; however, acknowledging that ‘there are potential policy and environmental constraints to future availability of this material’ and confirming that ‘discussions are ongoing with Cumbria County Council, the nearest authority with quarries producing high PSV stone, so that both authorities remain aware of the current situation in their areas’. 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. Mid-term threats to the future supply of magnesian limestone from the NYCC area are also highlighted in the LAA
- 1.9.14. The reserve of sand and gravel reported within the North Yorkshire LAA 5<sup>th</sup> review document has increased substantially between 2017 and 2018 (by 62% from 17.4 million tonnes to 28.2 million tonnes) due to new permissions being granted – as forecast within previous LAAs. However the 5<sup>th</sup> review document continues to predict ‘constraints on supply of sand and gravel ... in the long term as a result of depletion of the landbank, potentially impacting on security of supply to the North Yorkshire internal market, the West and South Yorkshire areas and into the North East Region’. In terms of the landbanks presented within the NYLAA, the 5<sup>th</sup> review document puts the 2018 landbanks at 16.6 years for sand and gravel, 27.1 years for crushed rock (outside of YDNP) and 25.2 years for crushed rock within the YDNP.
- 1.9.15. In the case of the aggregates quarried outside of the YDNP, the future annual aggregate provision quantities upon which these landbanks are not solely informed by 10-year sales averages. Instead the methodology employed adjusts the sales average up to reflect current national and local aspirations for growth, particularly expected growth in house building, which links directly to a requirement for aggregate.
- 1.9.16. Consequently, the NYLAA fifth review document confirms that ‘This LAA suggests future provision for sand and gravel at an overall annual rate equivalent to 2.44mt and for crushed rock at an annual rate of 3.75mt for the period 2019 to 2030 for the North Yorkshire County Council minerals plan area.’ This compares to 10-year sales averages of 1.7 million tonnes for sand and gravel and 3.0 million tonnes for crushed rock for the NYLAA Area outside of the YDNP. The adjusted figures are 44% and 25% higher than the historic sales averages respectively. However, it notable that no future provision rate for crushed rock from the YDNP is proposed.

***Derbyshire, Derby and Peak District National Park LAA***

- 1.9.17. The Derbyshire, Derby and Peak District National Park LAA 2020 (DD&PDLAA 2020) identifies an estimated reserve of rock for aggregate use within Derbyshire and the Peak District, at active and inactive sites (excluding dormant sites), of 766 million tonnes. This reserve comprises 763 million tonnes of limestone and 3.4 million tonnes of sandstone/ gritstone. Approximately 85% of the total aggregate reserve is located within

Derbyshire with the remaining 15% being within the Peak District National Park. The LAA identifies that this quantity of reserves would be sufficient for over 60 years provision based on current production figures.

- 1.9.18. In terms of supply levels, the DD&PDLAA 2020 calculates a 10-year sales average of crushed rock aggregate for Derbyshire and the Peak District of 9.79 million tonnes. However, the DD&PDLAA 2020 notes that an increase in production of crushed rock for aggregate in the last couple of years has led to a significant increase in the three-year average sales. Taking account of a range of issues, particularly current and future economic growth in areas that use crushed rock from the area (including West Yorkshire), the DD&PDLAA 2020 adopts the approach of using the most recent 3 year sales figure of 12.51mt to reflect the recent and continued increase in production of aggregate crushed rock in the area for the purpose of calculating the landbank.
- 1.9.19. The DD&PDLAA 2020 identifies that 'Derbyshire and PDNP is a significant net exporter of aggregate grade crushed rock to other areas, amounting to an average of around 7-8 million tonnes each year.' The LAA further advises that Derbyshire has significant resources of hard rock compared to many other areas in the country and affirms that it will be important, therefore, to maintain this level of supply in order to sustain and stimulate national economic growth.
- 1.9.20. The LAA identifies that in 2019 only 37% of the crushed rock aggregate produced in Derbyshire and the Peak District was consumed within Derbyshire and the Peak District, with the remainder exported to supply the construction industries of other areas. The DD&PDLAA 2020 estimates that 15% of the crushed rock produced in Derbyshire (1.4 million tonnes) and 0.8% of the crushed rock produced in the Peak District (0.028 million tonnes) is exported to Yorkshire & The Humber. The BGS data set out in Table 17 of this report indicates that in 2019 approximately 585,500 tonnes of crushed rock aggregate extracted from Derbyshire was consumed in West Yorkshire.
- 1.9.21. The approach within the DD&PDLAA 2020 of utilising a (higher) 3 year rather than 10 year sales average figure for future aggregate provision is partly intended to facilitate a gradual reduction in the proportion of aggregates produced within the Peak District National Park (PDNP). The PDNP has a policy in its Core Strategy (Policy MIN1) which does not allow for further new quarries or extensions to existing quarries, in order to reduce progressively the amount and proportion of aggregate grade crushed rock that is quarried from within the Park in order to protect the nationally important landscape.
- 1.9.22. Consequently, the DD&PDLAA reduces the future crushed rock 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.

1.9.23. In relation to sand and gravel, reserves are located within Derby and Derbyshire (not in the National Park). Total sand and gravel reserves at the end of 2017 are calculated as 10.55 million tonnes with a landbank of 10.6 years at the proposed provision figure of 0.99 million tonnes per annum. The LAA advises that projections indicate that sand and gravel output will continue to increase slightly over the next few years, with the economy continuing to recover, but the production capacity of the existing processing plants at the quarries will dictate that it cannot increase significantly above the identified provision rate.

**County Durham, Northumberland and Tyne and Wear**

1.9.24. The most recent published version of the Joint Local Aggregates Assessment for County Durham, Northumberland and Tyne and Wear December 2018 (updated with 2017 sales and reserves data), provides the following quantitative assessment of supply and reserve levels:

Sub-area	Resource	Permitted Reserve	Annual demand Requirement	Demand 2018 to 2033	Balance Between Demand and Supply 2018 to 2033
County Durham	Crushed rock	130,744,734	2,799,000	44,784,000	+85,961,000
	Sand and gravel	7,112,971	303,000	4,848,000	+2,265,000
Northumberland	Crushed rock	81,015,832	1,650,000	26,400,000	+54,615,000
	Sand and gravel	5,410,000	420,000	6,720,000	-1,310,000
Tyne and Wear	Crushed rock	7,000,000 e	375,000	6,000,000	+1,000,000
	Sand and gravel	6,200,000 e	225,000	3,600,000	+2,600,000

1.9.25. The LAA advises of the following key conclusions:

- *County Durham has in quantitative terms, sufficient permitted reserves of both crushed rock and sand and gravel to meet the calculated demand from quarries in this sub-area in the long term. (however a specific additional need for Carboniferous Limestone is identified and it is noted that several quarries are currently inactive).*
- *Northumberland has sufficient permitted reserves of crushed rock to meet the calculated demand (however much of the reserve is bound up in a single site and certain quarries have a relatively short remaining lifetime).*
- *There is an identified shortfall in permitted reserves of sand and gravel in the medium to long-term in Northumberland.*
- *Tyne and Wear has sufficient permitted reserves of crushed rock and sand and gravel to meet the calculated demand from quarries in this sub-area (however reserves are bound up in a limited number of sites and certain quarries have a relatively short remaining lifetime).*

1.9.26. The LAA recognises minerals flows between County Durham, Northumberland and Tyne and Wear and North Yorkshire but no minerals

supply relationship with West Yorkshire is identified. This is likely to be because the LAA was informed by AM2014 minerals flow data which indicated that, at that time, there were no significant minerals flows from the North East to West Yorkshire. A very different picture is indicated by AM2019 data which points to substantial quantities of aggregate now being transported from the North East into West Yorkshire (primarily crushed rock but also sand and gravel).

#### ***Doncaster and Rotherham LAA***

- 1.9.27. An updated Local Aggregate Assessment (2019) for Doncaster and Rotherham (D&RLAA 2019) was also ratified at the October 2019 AWP meeting. According to BGS figures, Doncaster provided up to 10% of the crushed rock consumed within West Yorkshire in 2019. The DRLAA 2019 proposes apportionments based on historic average sales figures. Aggregate production within the Doncaster and Rotherham area relates to crushed rock (Magnesian Limestone) and also sand and gravel.
- 1.9.28. In relation to crushed rock the LAA advises that the landbank currently stands at 30.9 years. The LAA confirms that between 70 to 90% of the material produced in Doncaster stays within South Yorkshire and West Yorkshire, with 20% to 30% of West Yorkshire's crushed rock aggregate consumption being sourced from Doncaster. The D&RLAA 2019 does not flag up any concerns regarding the supply of crushed rock in the short, medium or long term.
- 1.9.29. In relation to sand and gravel, based on ten-year average sales of 300,000 tonnes, the landbank calculated in the DRLAA2019 stands at 17 years for 2018, which is well above the 7 year minimum set in the NPPF. However the LAA advises that only a small proportion of the remaining permitted reserve in Doncaster is sharp sand suitable for use as concreting aggregate and that South Yorkshire will continue to be dependent on external sources to meet their sand and gravel needs including imports from Nottinghamshire, Lincolnshire and the East Riding to deliver Local Plan proposals. The DRLAA2019 further confirms that:
- 'Sand and gravel resources are, continuing to decline locally and regionally with limited new permissions and allocations coming forward in Doncaster, the reserve for sand and gravel will continue to decline, with potentially no remaining sand and gravel reserves by 2035 (the end of the Doncaster plan period). If the trend for sand and gravel continues to increase, the reserve will decline quicker. Based on ten-year average sales (of 0.3Mt) the landbank could go below seven years by 2028. If extraction stays at the same level as the three-year average, the landbank will go below 7 years half way through the plan period.'*
- 1.9.30. The D&RLAA 2019 advises that previous monitoring indicated that crushed rock is increasingly replacing sand and gravel for concreting manufacturing. Therefore, whilst any flows of concreting 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. This issue is explored further in the recent WYCA report on Magnesian Limestone, see Section 2.4 below.

**Humber Area LAA**

- 1.9.31. The latest Humber Area Local Aggregates Assessment, ratified by the Aggregates Working Party in October 2019, covers the East Riding of Yorkshire, Hull, North Lincolnshire and North-East Lincolnshire for the 2018 data reporting period. The LAA indicates that there has been some changes from 2017 to 2018, with the Sand & Gravel landbank returning to similar level to 2016, at 8.82 years, after a dip in 2017, and the crushed rock landbank reducing by almost 10 years from the 2017 level to 24.81 years.
- 1.9.32. The Humber LAA confirms that the Humber Area continues to be a net importer of aggregates. However, it is noted that 2019 BGS data indicates that between 10% and 20% of the sand and gravel consumed within the West Yorkshire came from the Humber Area (East Yorkshire). This amounts to between 47,000 tonnes and 93,000 tonnes of aggregate and indicates that there are significant flows of sand and gravel from East Yorkshire into West Yorkshire.
- 1.9.33. Additionally, the Humber LAA notes that marine aggregates provide a potential source of aggregates to the Yorkshire & Humber Region, including West Yorkshire, and beyond. The Humber Area LAA 2019 states that 1 new dredging applications could potentially increase permitted extraction by 0.6 million tonnes (to 6.5 million tonnes p.a.) and that current estimates suggest there are 26 Years of primary marine aggregate production permitted.
- 1.9.34. The LAA advises that ‘the majority of landings that took place on the Humber were at the relocated Humber Sand and Gravel facility at King George Dock in Hull ... The landing facility at King George Dock, can take bigger vessels than the previous facility at Alexandra Dock and is large enough to land 2 million tonnes per year. It also has the advantage of being connected to the rail network, which has the potential of improved distribution to the wider region.’
- 1.9.35. At paragraph 6.15 the Humber Area LAA 2019 recognises that, due to the forecast contraction of existing sources of supply, there may be a need to increase exports of sand and gravel from the Humber Area to adjacent sub-regions, including West Yorkshire. Specific reference is made to the need for concreting sand in the Leeds/ Bradford areas.

### Lancashire LAA

1.9.36. Lancashire County Council have published a Joint Lancashire Local Aggregate Assessment – November 2019 (2018 data). The LAA provides the following landbank data:

TAB4 – Table extracted from Joint Lancashire Local Aggregate Assessment – November 2019 (2018 data)

Executive Summary									
	Sales (Mt)	Av (10yr) Sales <sup>1</sup> (Mt)	Av (3yr) Sales (Mt)	Trend <sup>2</sup>	LAA Rate <sup>3</sup> (Mt)	Permitted Reserves <sup>4</sup> (Mt)	Landbank (Yr) <sup>5</sup>	Capacity (Mt/Yr) <sup>6</sup>	Comments
Land won sand and gravel	0.5	0.43	0.50	↔	0.50	5.9	12		Runshaw, which represents over half of the permitted reserves, has yet to start working. Number of quarries set to reduce during the forecast period. Sales are unchanged.
Limestone	2.6	1.92	2.36	↑	2.36	52.68	22		Number of quarries set to reduce during the forecast period. Sales increased on the previous year, and are returning to precession levels.
Gritstone	0.99	0.94	1.18	↔	1.18	75.38	64		Approximately 70% of the permitted reserve is held in Whitworth Quarry. Sales have increased on the previous year.

1.9.37. Although West Yorkshire is within relatively close proximity of Lancashire, there is no evidence that there are any significant aggregate flows between the two areas. However, given the national and local aspirations to limit mineral extraction in National Parks and the potential future constraints on sand and gravel extraction within North Yorkshire, there are likely to be future changes in minerals supply flows, including new supplies entering the West Yorkshire market.

1.9.38. Such changes could potentially lead to an increase in cross-boundary aggregate flows between Lancashire and West Yorkshire, particularly in terms of sand and gravel. This is recognised within the Lancashire LAA as follows:

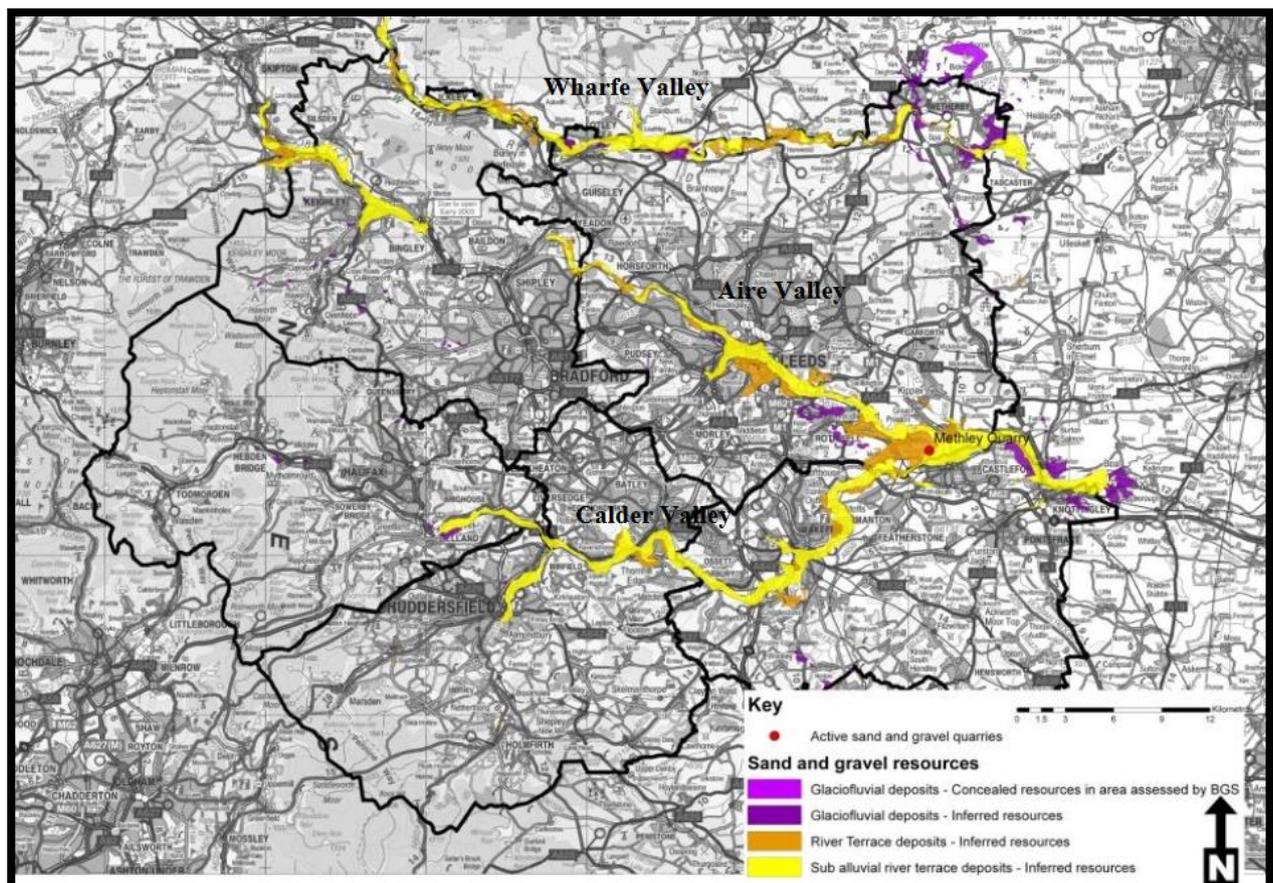
*If particular quarries in neighbouring authorities were to cease production it could have an impact on the market in the Plan area, and affect the rate of consumption of permitted reserves at particular quarries. This is particularly relevant when considering national and local aspirations to limit mineral working in national parks, and the effect this could have on supply when extant planning permissions in the Lake District, Peak District and Yorkshire Dales reach the end of their operational or conditioned life span. 2042 in particular is a date many planning permissions will cease and there can be a relatively high degree of certainty that supply will be affected both in the Plan area and its current market area (this could include changes to the extent of the market area if businesses in areas such as West Yorkshire, which currently source a large proportion of the aggregates used from the Yorkshire Dales National Park, find the quarries in Lancashire to be an economic alternative market).*

## 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 FIG6 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 FIG7 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.

**FIG7 – 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 un-sterilised resources was calculated. Using this area of un-sterilised resources for West Yorkshire, a two-metre average resource thickness and a density of 1.75t/m<sup>3</sup> was applied to obtain an estimate of 147 million tonnes of un-sterilised 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. West Yorkshire's remaining sand and gravel extraction industry is now limited to one relatively small site in the District of Kirklees, with an additional/replacement site currently at application stage in Wakefield. There are currently fewer productive sites than at any time since 1986 and annual output is at a recorded low.

## **2.2. Sandstone Aggregate**

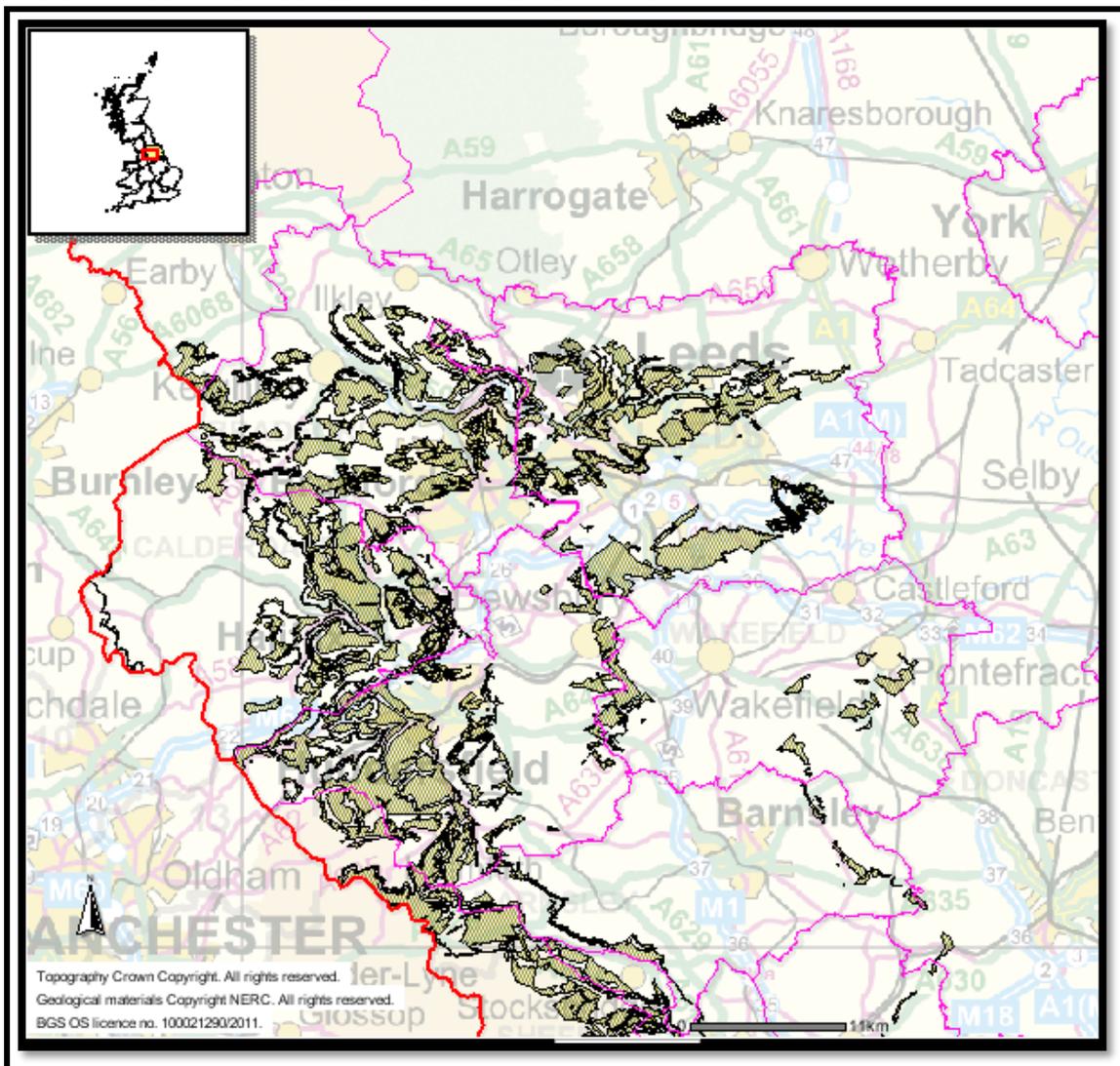
- 2.2.1. There is wide distribution of quarries producing crushed sandstone; mainly in the millstone grit series of Kirklees, Bradford and Calderdale but also in the coal measure sandstone series, notably the Thornhill Rock in Leeds. Some of the quarries are quite large such as Crosland Moor, Shepley, 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 within West Yorkshire; 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.

## **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.
- 2.3.2. 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.

2.3.3. 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.

**FIG8 – West Yorkshire Sandstone Resource**



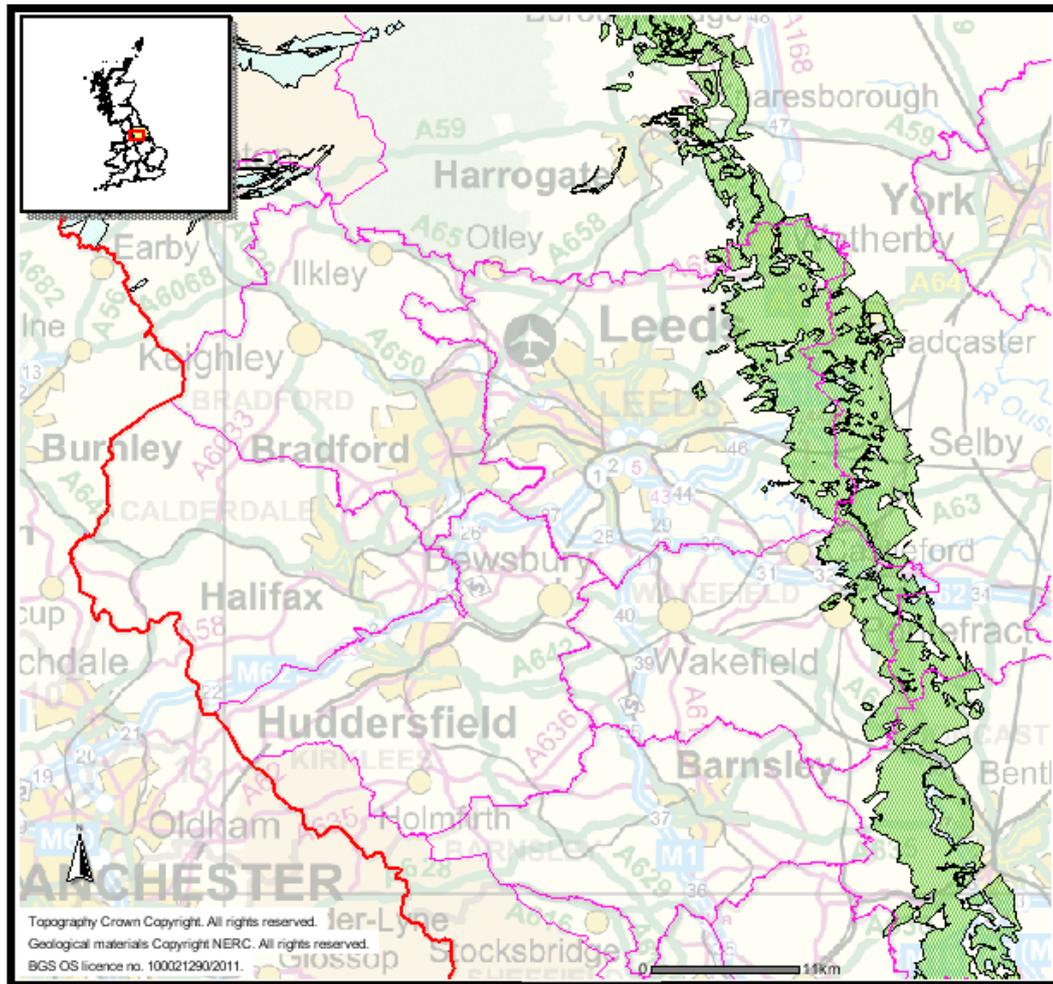
Source: BGS, 2015. Minerals Information Online  
Available at: <http://www.bgs.ac.uk/mineralsuk/maps/maps.html>

## 2.4. Limestone Aggregate

- 2.4.1. Magnesian Limestone is the common name for a group of dolomite and dolomitic limestones running in a 200 Kilometre long, generally 8 to 12 Kilometre wide, band up the centre of northern England from Nottingham to Sunderland dating from the Permian period. The Magnesian Limestones which occur in the Yorkshire and Humber Region which comprise the Cadeby and Brotherton formations and both of these formations occur and are worked along the eastern edge of the Leeds and Wakefield Districts in West Yorkshire. These formations have historically been extensively quarried and continue to be an important source of construction aggregates, industrial minerals, building stones and agricultural lime.
- 2.4.2. Security of supply of aggregates derived from Magnesian Limestones is a particularly significant issue for South and West Yorkshire. This is because a significant proportion of the high volumes of construction aggregates consumed in the Leeds and Sheffield City Regions each year are supplied from Magnesian Limestone quarries. The BGS estimate that in 2019 60%-70% of the crushed rock aggregate consumed in South Yorkshire and 1%-10% of the crushed rock aggregate consumed in West Yorkshire was supplied from Doncaster (only Magnesian Limestone is currently worked for aggregate in Doncaster).
- 2.4.3. Magnesian Limestone aggregates are generally found to be unsuitable to produce coated roadstone (asphalt) due to its insufficient resistance to polishing, with high specification road surfacing aggregate currently primarily supplied into West Yorkshire from quarries situated within the Yorkshire Dales National Park. However approximately 40% of Magnesian Limestone quarries are thought to be capable of producing aggregates of sufficient strength to be used as a road sub-base or as a concrete aggregate.
- 2.4.4. In terms of the uses of the lower strength aggregates produced at the other 60% of quarries, these are understood to include:
- Decorative chippings
  - Bedding for permeable paving
  - Pipe Bedding
  - Capping material
  - Chippings for footpaths, driveways & flat roofs
  - Aggregate for land drainage/ filter media
  - Bulk Fill
  - Aggregate for gabion baskets
- 2.4.5. Issues associated with the supply of and demand for Magnesian Limestone Aggregates are covered more extensively in the WYCA produced 2017 report: The Quarrying of Magnesian Limestone for Aggregate in the Yorkshire and Humber Region. However, in brief this report found that:

*Due to the variability of the resource and the limitations of its suitability for certain high specification aggregate uses, it is acknowledged that Magnesian Limestone aggregates will only ever supply a part of the overall market for construction aggregates. However the further exploitation of remaining Magnesian Limestone resources for aggregates is likely to be an important element of meeting the demand for aggregates into the future, with industry already reporting an increase in demand and Minerals Planning Authorities in North Yorkshire and Leeds and planning for the release of substantial additional reserves.*

**FIG9 – West Yorkshire Limestone Resource**



### 3. AGGREGATE RESERVES AND SALES

#### 3.1. Sand & Gravel Reserves

- 3.1.1. Mineral resources are minerals thought to be present within a given geographical area, 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 of potential 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 mineral 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. Therefore, allocated resources are not considered to constitute mineral reserves for the purposes of the LAA.
- 3.1.3. For information purposes Table 5 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 development scheme being proposed.

**TAB5 – West Yorkshire Sand & Gravel Allocations**

<b>Site</b>	<b>Type of Allocation</b>
<b><i>Leeds</i></b>	
Midgley Farm, Otley	Allocated Site
Methley, Leeds	Extensive Area of Search
<b><i>Kirklees</i></b>	
Bradley Island (Bradley)	Area of Search
<b><i>Wakefield</i></b>	
Foxholes North of Altofts	Allocated Site
Penbank, Castleford	Allocated Site
The Wyke, Horbury	Allocated Site
Stanley Ferry, Wakefield	Allocated Site
The Strands, Horbury	Allocated Site
<b>Potential Total Reserve</b>	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 misleadingly 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 2020, only one site remains within West Yorkshire with permitted reserves of sand and gravel. This site, located within Kirklees, began production in late 2014. At the current rate of extraction reserves at the site will be exhausted within 3 years. The only remaining active sand and gravel extraction site located within the District of Leeds closed in July 2013. 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. Consequently, no extraction now takes place outside of Kirklees.
- 3.1.7. The previous application to reactivate a dormant sand and gravel site within Wakefield was withdrawn some years ago. However, a new application was submitted for the extraction of an estimated 1.6 million tonne River Terrace deposit of Sand and Gravel at Stanley Ferry in Wakefield in June 2020. The applicant is the operator of the only currently existing sand and gravel quarry within Kirklees and the proposed new working in Wakefield would extract at a similar rate (C. 0.15 million tonnes per annum) and would involve the transportation of all mineral exclusively by waterway (barge) to processing and distribution depots in either Ravensthorpe or Leeds.
- 3.1.8. The total West Yorkshire reserve of Sand and Gravel as of 31 December 2020 was 0.57 million tonnes. Table 6 below sets out regional level sand and gravel reserves data, as presented within the Yorkshire and Humber Aggregate Working Party Annual Monitoring Report 2019 – the most up-to-date report available. It is notable that total Regional sand and gravel reserves declined relatively rapidly after 2012 and in 2014. However, after 2014, Regional sand & gravel reserves have recovered well and in 2018 were at the highest level seen for over a decade.
- 3.1.9. West Yorkshire consistently provides for a relatively insignificant proportion of regional reserves, with only 1% of the 2018 Yorkshire and the Humber Sand and Gravel Reserve contained within West Yorkshire.

**TAB6 – Yorkshire & Humber Sand and Gravel Reserves 2009-2018**

Sub-Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Sand and Gravel Reserves</b>										
North Yorkshire	18.4	17.98	16.24	19.1	18.63	16.9	19.5	<sup>10</sup> 20.5	17.43	28.2
South Yorkshire	5	5.7	5.79	5.67	5.95	2.29	4.2	8.78	5.60	5.63
West Yorkshire	0.33	0.25	0.2	0.14	0	0.88	0.99	0.77	0.77	0.57
East Riding and N - Lincs	14.4	9.3	11.1	9.7	8.1	7.9	7.06	7.62	5.73	7.32
<b>Total Yorkshire and Humber</b>	<b>38.13</b>	<b>33.23</b>	<b>33.33</b>	<b>34.61</b>	<b>32.68</b>	<b>27.97</b>	<b>31.75</b>	<b>37.67</b>	<b>29.53</b>	<b>41.72</b>

<sup>10</sup> Table Extracted From Yorkshire and Humber Aggregate Working Party Annual Monitoring Report 2019

## 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. Gravel for concreting purposes is no longer produced. Between 2015 and 2020 the West Yorkshire sand and gravel extraction industry has comprised only a single modestly sized sand and gravel extraction site.
- 3.2.2. Table 7 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 2019.

**TAB7 – Yorkshire & Humber Sand and Gravel Sales 2009-2018<sup>11</sup>**

Sub-Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Sand and Gravel Sales</b>										
North Yorkshire	1.7	1.6	1.7	1.6	1.5	1.7	1.7	1.7	1.75	1.8
South and West Yorkshire <sup>1</sup>	0.5	0.26	0.24	0.24	0.18	0.21	0.54	0.62	0.72	0.73
East Riding and North Lincolnshire	1.0	0.59	0.71	0.56	0.91	0.93	0.92	0.9	0.84	0.92
<b>Total Yorkshire and Humber</b>	<b>3.2</b>	<b>2.45</b>	<b>2.65</b>	<b>2.4</b>	<b>2.59</b>	<b>2.83</b>	<b>3.16</b>	<b>3.22</b>	<b>3.31</b>	<b>3.45</b>

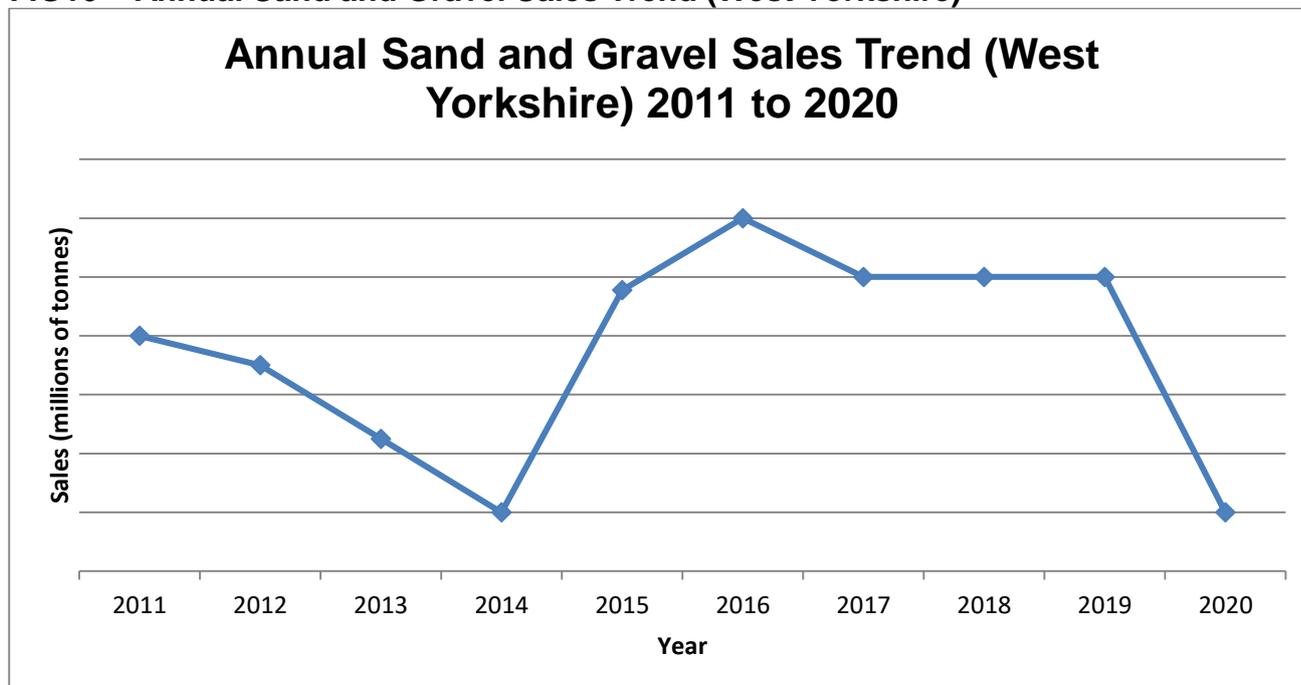
- 3.2.3. West and South Yorkshire sales of Sand and Gravel comprised 21% of the Regional Total in 2018, with the vast majority of output being confined to the administrative area of Doncaster Council. After declining to a historic low in 2010 and flat lining thereafter until 2014, an upwards trend is now detectable in the combined sand and gravel output for South and West Yorkshire as part of a discernible Region wide upwards trend. However, West Yorkshire in specific bucks this trend, with steadily declining sales and depleting reserves, associated with resource limitations and very limited industry investment in extracting those resources which do remain available for working.
- 3.2.4. As noted elsewhere within this LAA, the upwards trend in Regional land won sand and gravel sales and reserves is likely to be difficult to sustain in the mid to long term due to resource limitations, particularly those noted within the North Yorkshire and Doncaster and Rotherham LAAs. This will necessitate finding new sources of supply – including potentially marine dredged resources and/ or greater substitution of crushed rock – if the needs of the Regional construction industry are to continue to be met.
- 3.2.5. The first West Yorkshire LAA calculated a 2012 West Yorkshire sand and gravel sales figure from direct operator reporting and separated out 2004-2011 combined sales data using a % proxy. Table 8 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 to 2020 figures have been used to calculate the 10-year sales average but have been obscured within the table for commercial confidentiality reasons. Figure 10 illustrates the ten-year sales trend, with the Y Axis removed for confidentiality reasons.

<sup>11</sup> Table Extracted From Yorkshire and Humber Aggregate Working Party Annual Monitoring Report 2019

## TAB8 – West Yorkshire Sand and Gravel Sales 2011-2020

Note: All Figures in Million Tonnes	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Ten Year Average
W Yorks Sales	0.08	0.07	0.05	-	-	-	-	-	-	-	0.08

FIG10 – Annual Sand and Gravel Sales Trend (West Yorkshire)



3.2.6. Based upon the above figures a West Yorkshire 10-year annual average sand & gravel sales figure of 0.08 million tonnes can be calculated. West Yorkshire sand and gravel reserves, as of 31 December 2020 were 0.15 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:

### 1 years and 11 months

3.2.7. The above landbank figure represents a decrease of 4 years and 5 months from 10-year average sales based landbank figure calculated in the West Yorkshire LAA 2019 (6 years and 4 months).

3.2.8. The decreasing landbank is due to permitted reserves being extracted and not replenished. Given the lead-in time required for the permitting of new sand and gravel reserves, the need to release additional sand and gravel reserves within West Yorkshire for extraction is now becoming urgent, if a complete cessation of sand and gravel quarrying after 2023 is to be avoided.

3.2.9. An application was received by Wakefield Council for a new sand and gravel quarry in 2020. However, in the event that this site is consented, it is possible that implementation may take some time given the need to provide the necessary infrastructure required to facilitate waterway transportation of the mineral.

- 3.2.10. If permitted and implemented, this new sand and gravel extraction consent would temporarily improve the West Yorkshire sand and gravel landbank position. However, it would remain the case that the entire West Yorkshire sand and gravel landbank would be vested in a single site with all the security of supply vulnerabilities that this implies.
- 3.2.11. Furthermore, implementation of the Wakefield permission would just allow the previous relatively low level of sand and gravel production within West Yorkshire to be maintained but would not significantly bridge the large gap between West Yorkshire sand and gravel supply and demand. This application alone should not therefore be seen as a solution to the current West Yorkshire sand and gravel landbank shortage or to mean that the release of additional reserves is not necessary. Other information relevant to setting a sand and gravel apportionment figure and deriving an appropriate landbank is 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 ridge 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”<sup>12</sup>. Nonetheless it is possible to utilise the sand which can be produced by crushing down Carboniferous Sandstones as a building and concreting sand and to produce reconstituted stone building blocks.
- 3.3.3. As of 31 December 2020, thirty-one quarries existed within West Yorkshire which either actively produce or have in the recent 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. However relatively significant quantities of crushed sandstone aggregates are incorporated into artificial stone paving and walling products. Howley Park, Shepley and Moselden quarries are also known to be major suppliers to the concrete works at Southowram.
- 3.3.4. Conversely Dolomitic Limestone, which is potentially capable of producing a higher quality concrete and road stone grade aggregate, is currently only actively produced in Wakefield, at two locations adjacent to Knottingley. At Darrington Quarry Mineral is trucked beneath the M62 to a processing plant. This aggregate is washed to remove fines, thereby achieving a higher specification for its after use. The total West Yorkshire reserve of Crushed Rock Aggregate as of 31 December 2020 is estimated to have been 36.96 million tonnes.
- 3.3.5. Table 9 below sets out regional level crushed rock aggregate reserve data for the 2009-2018 period. Table 10 provides the West Yorkshire reserve figures for the period 2008-2020. In terms of the degree of confidence which should be placed upon these figures it should be noted that in several instances, where site operators have not provided survey returns, reserves have been estimated. There is also likely to be some variation in the accuracy of operator assessments of the proportion of reserves which are to be used for building stone vs. aggregates as this may not be apparent until the stone has been won.

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<sup>12</sup> 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.

**TAB9 – Yorkshire & Humber Crushed Rock Reserves 2009-2018<sup>13</sup>**

Sub-Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Crushed Rock Reserves</b>										
North Yorkshire	210.1	204.6	202.2	191.82	189.79	185.91	178.99	170.7	165.29	156.64
South Yorkshire	63.4	62.4	61.23	60.8	59.5	57.6	56.58	52.10	51.70	53.30
West Yorkshire	27.14	15.74 <sup>(1)</sup>	15.44 <sup>(1)</sup>	28.5	30.4	25.7	33.74	29.82	38.78	40.78
East Riding and North Lincolnshire	1.7	5.6	10.78	10.88	12.7	12.95	13.39	13.09	14.45	13.40
<b>Total Yorkshire and Humber</b>	<b>302.34</b>	<b>288.34</b>	<b>289.65</b>	<b>292</b>	<b>292.39</b>	<b>282.16</b>	<b>282.7</b>	<b>265.71</b>	<b>270.22</b>	<b>264.12</b>

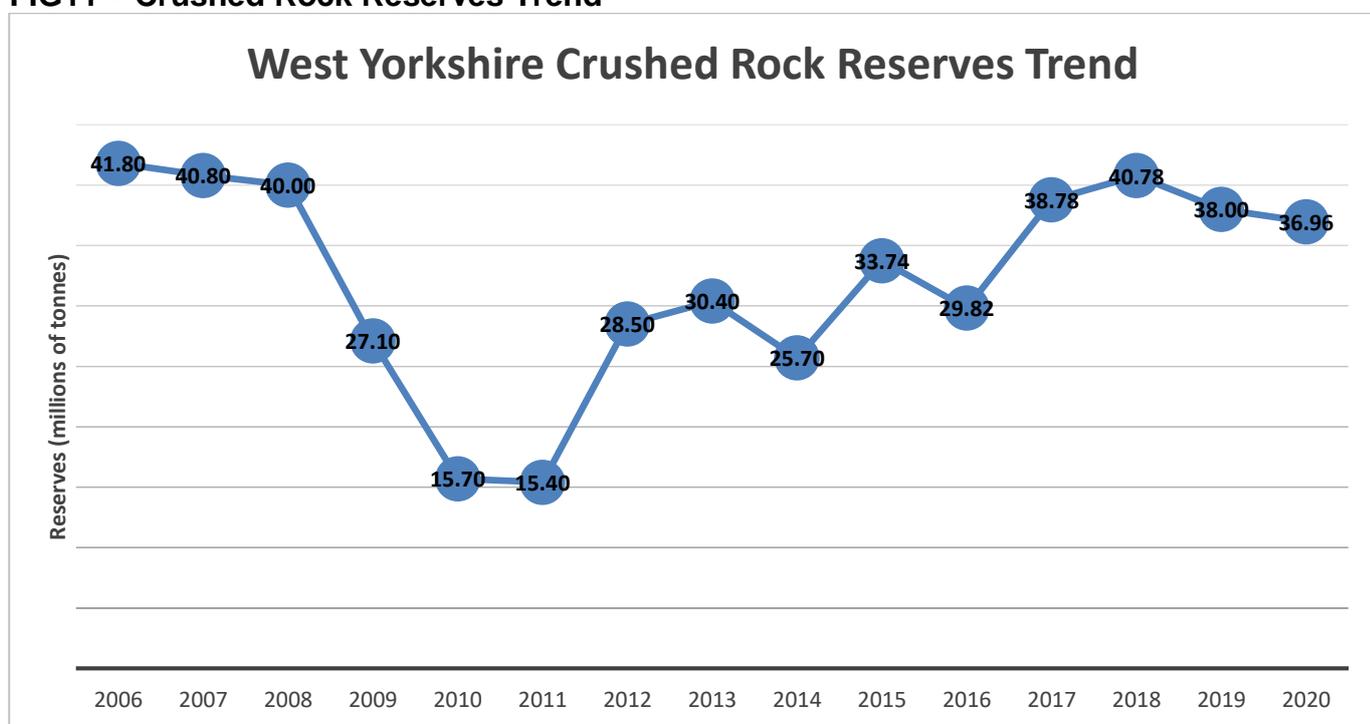
\* Data known to be incomplete

**TAB10 – West Yorkshire Crushed Rock Reserves 2008-2020**

Crushed Rock Reserves Trend (West Yorkshire)											Note: All Figures in Million Tonnes			
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
<b>W Yorks</b>	40.00	27.10	15.70	15.40	28.50	30.40	25.70	33.74	29.82	38.78	40.78	38.00	36.96	

Note: Figures for 2008 & 2009 taken from RAWP Annual Monitoring Reports; figures in orange are acknowledged to be incomplete

**FIG11 – Crushed Rock Reserves Trend**



3.3.6. Crushed Rock Aggregate reserve levels within West Yorkshire appear to be plateauing/ slightly declining following a gradual, discernible, upwards trend since the recession low of 2010/ 2011. Estimated reserves are now tracking slightly below pre-recession levels. Changes in reserves will usually relate to either new reserves being permitted, existing reserves being exhausted or operator reassessments of the quantities of reserves present at their site - which may be refined as working progresses and may change significantly over the lifetime of a quarry. Any significant change in reserves year on year may be a factor of any one of these causes or a combination of several.

<sup>13</sup> Yorkshire and Humber Aggregate Working Party Annual Monitoring Report 2019

- 3.3.7. It is considered likely that the improvement in economic conditions since 2011 has been a factor in the generally upwards trajectory in reserve levels since that time. This positive association between an improving economy and increasing aggregate reserves may be due to new reserves being permitted. However, it may also be partly due to higher minerals values leading to operators reassessing the viability of extracting those existing quarry reserves which may have previously been considered uneconomic due to quality or stripping ratio factors, and consequently increasing their reported reserve estimates.
- 3.3.8. If pre-recession reserve levels were to be used as a benchmark for optimum West Yorkshire crushed rock aggregate reserve levels, then it could be argued that West Yorkshire Reserves remain below their optimum level. However optimum reserve levels are complicated to assess as they relate to factors such as the geological diversity of the reserve, distribution of the reserve between different quarries/ geographical areas/ geological formations and the relative rates of working and types of aggregate products produced at the quarries. It should be noted that, within West Yorkshire, a small number of large quarries make up a disproportionately large proportion of the apparent reserves, with the majority of the 32 quarries listed at Appendix 1 being relatively small building stone quarries with limited reserves and output, many of which only sporadically produce aggregates.

### 3.4. Crushed Rock Sales

3.4.1. Table 11 below sets out regional level crushed rock aggregate sales data for the 2009-2018 period. Table 12 and Figure 12 provide ten-year West Yorkshire sales data for the 2011-2020 period.

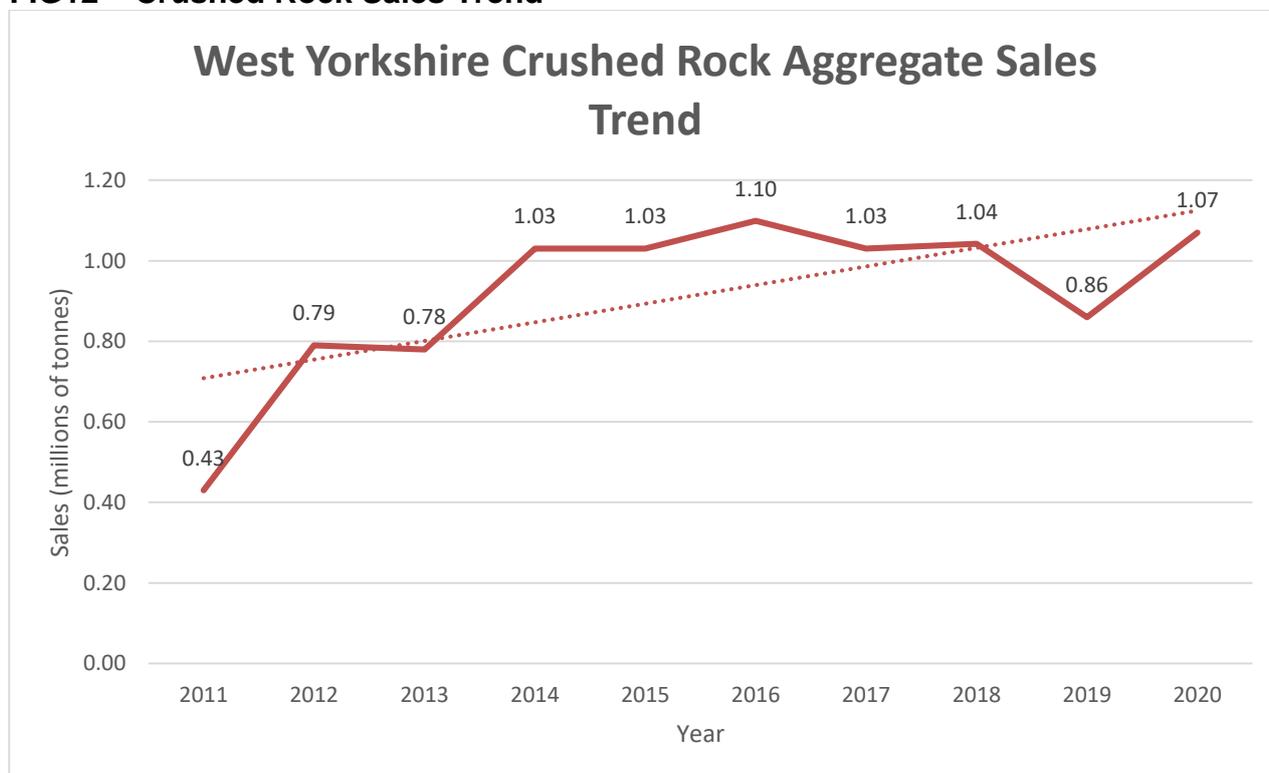
**TAB11 – Yorkshire & Humber Crushed Rock Sales 2009-2020<sup>14</sup>**

Sub-Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Aggregate Crushed Rock Sales</b>										
North Yorkshire	5.3	5.51	4.45	5.33	5.65	6.49	7.04	6.67	6.68	6.85
South Yorkshire	1.4	1.1	1.05	1.14	1.27	2.25	2.4	2.6	2.01	2.04
West Yorkshire	0.9	0.53	0.43	0.79	0.78	1.03	1.03	1.10	1.03	1.04
East Riding and North Lincolnshire	0.1	0.16	0.23	0.21	0.21	0.75	0.75	0.85	0.86	0.98
<b>Total Yorkshire and Humber</b>	<b>7.7</b>	<b>7.30</b>	<b>6.16</b>	<b>7.47</b>	<b>7.91</b>	<b>10.52</b>	<b>11.22</b>	<b>11.22</b>	<b>10.58</b>	<b>11.27</b>

**TAB12 – West Yorkshire Crushed Rock Sales 2011-2020**

Note: All Figures in Million Tonnes	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Ten Year Average
<b>W Yorks Crushed Rock Sales</b>	0.43	0.79	0.78	1.03	1.03	1.10	1.03	1.04	0.86	1.07	<b>0.92</b>

**FIG12 – Crushed Rock Sales Trend**



<sup>14</sup> Yorkshire and Humber Aggregate Working Party Annual Monitoring Report 2019

- 3.4.2. It should be noted that, following recovery to approximately pre-recession levels, sales of crushed rock have remained relatively flat within West Yorkshire, with minor fluctuations. Total quarry output for West Yorkshire has remained within a range from 1 million to 1.1 million tonnes per annum for the last 7 years with the exception of 2019. However, 2019 should be considered to be an anomalous year, upon which a lower level of statistical confidence can be placed, due to the difficulties associated with undertaking a minerals survey during the Covid-19 crisis and the low survey response rate to the national AM 2019 survey.
- 3.4.3. A broadly similar trend can be observed in regional level aggregates data – with a period of current relative stability in crushed rock quarry output observable after a clear recovery from the recession low of 2010/ 2011. Since 2014 Regional crushed rock quarry output has remained within 500,000 tonnes of a consistent 11 million tonne per annum crushed rock output.
- 3.4.4. The West Yorkshire 10-year crushed rock sales average 20011-2020 stands at 0.92 million tonnes. With reserves as of 31 December 2020 at 36.96 million tonnes the landbank of crushed rock aggregates within West Yorkshire, based on 10-year average sales levels, can therefore be calculated as being:

### **34 years and 7 months**

- 3.4.5. This landbank figure represents a decrease of 12 years and 3 months from the landbank figure calculated in the West Yorkshire LAA 2019, which was 46 years and 10 months. Notwithstanding the still very significant level of the crushed rock aggregate landbank in West Yorkshire, the landbank is clearly currently depleting faster than new reserves are being permitted. Additionally, a substantial proportion of 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.
- 3.4.6. Furthermore, as discussed more extensively elsewhere in this report, it must be acknowledged that the West Yorkshire aggregate reserve is predominated by material which is unlikely to be capable of meeting the specifications required for the two principal construction aggregate uses of concrete manufacture and road construction. Other information relevant to setting an appropriate crushed rock apportionment for use in landbank calculation is assessed in Section 4 below.

## **4. APPRAISAL OF OTHER RELEVANT INFORMATION**

In addition to appraising aggregate reserve and sales data paragraph 213 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 following section sets out the other information which the West Yorkshire Mineral Planning Authorities consider 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. The inability of West Yorkshire to meet its own aggregate needs is evidenced by tables 13, 14 and 15 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 2014 and 2019 BGS Aggregate Minerals Survey and exclude imports from marine dredged sources - with reported wharf landings automatically assigned to the MPA in which the wharf is situated and with both aggregate wharf numbers and marine aggregate consumption inaccurately reported as 0 for West Yorkshire in the AMS2019.
- 4.1.3. Nonetheless it is known that increasing quantities of marine aggregates are being trucked and barged into West Yorkshire in addition to the imports listed in the tables below. Facilities known to receive marine dredged aggregate include Knostrop Wharf (C. 75,000 tonnes p.a.) and minerals processing facilities at Cross Green (Leeds); however, no reliable data on the total quantity of marine aggregate flows into West Yorkshire is currently available. This is clearly an area where further data would be beneficial given the known existing contribution of marine aggregates to West Yorkshire consumption and the potential for marine aggregates to make up an increasingly significant proportion of West Yorkshire sand and gravel demand, as land won sources become increasingly constrained.

**TAB13 – Proportion of CR Consumption Met by Imports for Y&H Sub-regions**

NB. Figures are in thousands of tonnes	Crushed Rock Imports		Crushed Rock Consumption		% of Consumption Met by Imports	
	2014	2019	2014	2019	2014	2019
<b>Humber (East Riding, North Lincolnshire and North East)</b>	700	851	724	979	97%	87%
<b>North Yorks, Yorkshire Dales and North York Moors National Parks</b>	526	408	2,801	2,901	19%	14%
<b>South Yorkshire</b>	971	1,056	2,124	2,870	46%	37%
<b>West Yorkshire</b>	1,997	2,257	2,536	2,342	79%	96%

**TAB14 – Proportion of S&G Consumption Met by Imports for Y&H Sub-regions**

NB. Figures are in thousands of tonnes	Sand & Gravel Imports		Sand & Gravel Consumption		% of Consumption Met by Imports	
	2014	2019	2014	2019	2014	2019
<b>Humber (East Riding, North Lincolnshire and North East)</b>	305	50	424	408	72%	12%
<b>North Yorks, Yorkshire Dales and North York Moors National Parks</b>	207	271	1,116	1,263	19%	21%
<b>South Yorkshire</b>	751	414	760	454	99%	91%
<b>West Yorkshire</b>	685	466	702	466	98%	100%

**TAB15 – Proportion of Total Aggregate Consumption Met by Imports Y&H Sub-regions**

NB. Figures are in thousands of tonnes	CR and S&G Imports		CR and S&G Consumption		% of Consumption Met by Imports	
	2014	2019	2014	2019	2014	2019
<b>Humber (East Riding, North Lincolnshire and North East)</b>	1,005	901	1,148	1,387	88%	65%
<b>North Yorks, Yorkshire Dales and North York Moors National Parks</b>	733	679	3,917	4,164	19%	16%
<b>South Yorkshire</b>	1,722	1,470	2,884	3,324	60%	44%
<b>West Yorkshire</b>	2,682	2,723	3,238	2,808	83%	97%

- 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 BGS 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 and final sales, particularly for rail-borne aggregates, may be to other regions. Additionally, as noted above, consumption of marine aggregates is incorrectly report as 0 for West Yorkshire.
- 4.1.5. However, it is considered that the quality of the data is sufficient to draw broad conclusions about the relative reliance of the different parts of the Yorkshire and Humber Region upon aggregate imports. The data broadly shows that all sub-areas of the Yorkshire and Humber Region are heavily reliant on aggregate imports to meet demand for primary aggregates, except for North Yorkshire.
- 4.1.6. The data also indicates that in 2019 the sand and gravel consumption figures were roughly equal to the sand and gravel import figures for both South and West Yorkshire, indicating that both sub-regions are heavily reliant upon sand and gravel imports to meet demand. This is unsurprising given the highly urban nature and constrained indigenous resources of both sub-regions.
- 4.1.7. For crushed rock the 2019 consumption and imports data clearly indicate that the sub-region which is most reliant upon imports to meet its crushed rock aggregate consumption needs is West Yorkshire. West Yorkshire has the worst 'trade balance' in terms of indigenous production vs. imports and a level of imports which roughly equates to the magnitude of consumption.
- 4.1.8. Some comparative analysis is possible between the AM2014 and AM2019 data. This comparative analysis indicates that the level of reliance of West Yorkshire upon aggregates produced in neighbouring authorities is increasing. This trend is in opposition to the three other sub-regions where some progress appears to have been being made in terms of increasing the proportion of aggregate consumption which is met by indigenous production.
- 4.1.9. 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 although the majority of RSA produced within West Yorkshire is also consumed within West Yorkshire, substantial quantities are also trucked elsewhere. Estimates range from one producer stating that 50% is sent out of the county to another producing stating that all RSA which they produce is thought to be consumed locally.
- 4.1.10. West Yorkshire appears therefore to have some significance as an RSA exporter, counterbalancing to a degree the imports 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.

4.1.11. In terms of the sources of the aggregate imported into West Yorkshire to meet its needs, available data is not comprehensive; however the most recent available data – provided by the British Geological Survey informed by their National Aggregate Minerals Survey 2019 (AMS2019) - are set out in tables 16 and 17 below.

4.1.12. The tables provide a comparative analysis of 2014 vs. 2019 data - as set out within the supporting tables to the national Aggregates Minerals Surveys for both years. The figures have been derived by applying the percentages to the stated total consumption figure for West Yorkshire and taking a mid-point between the 10% wide import estimate data ranges provided in the tables. Some caution should be attached to this analysis, due to the shortcomings of the data, the fact that the 2019 survey took place during the COVID-19 crisis and the degree of accuracy of the imports ranges stated in the table. However, the data does appear to imply that a substantial shift has taken place in minerals supply flows between 2014 and 2019.

**TAB16 – Estimated Origins of Sand & Gravel Supplied Into West Yorkshire**

Note: All figures in Tonnes	Annual Exports of Sand & Gravel to West Yorkshire 2014	Annual Exports of Sand & Gravel to West Yorkshire 2019	Change
North Yorkshire County Council	315,900	116,500	-199,400
East Yorkshire	175,500	69,900	-105,600
East Midlands (Nottinghamshire)	105,300	25,630	-79,670
East Midlands (Lincolnshire)	38,610	25,630	-12,980
North-East (Durham)	38,610	163,100	124,490
North-West (Chesh West/ Chesh East)	38,610	25,630	-12,980
West Midlands (Staffordshire)	38,610	0	-38,610
South Yorkshire (Doncaster)	3,861	25,630	21,769
<b>Total W Yorks Consumption</b>	<b>702,000</b>	<b>466,000</b>	<b>-236,000</b>

**TAB17 – Estimated Origins of Crushed Rock Supplied Into West Yorkshire**

Note: All figures in Tonnes	Annual Exports of Crushed Rock to West Yorkshire 2014	Annual Exports of Crushed Rock to West Yorkshire 2019	Change
Yorkshire Dales National Park	887,600	1,288,100	400,500
South Yorkshire (Doncaster)	634,000	128,810	-505,190
North Yorkshire County Council	380,400	128,810	-251,590
East Midlands (Derbyshire)	139,480	585,500	446,020
East Midlands (Leicestershire)	13,948	128,810	114,862
North-East (Durham)	139,480	128,810	-10,670
North-West (Cumbria CC)	13,948	128,810	114,862
<b>Total W Yorks Consumption</b>	<b>2,536,000</b>	<b>2,342,000</b>	<b>-194,000</b>

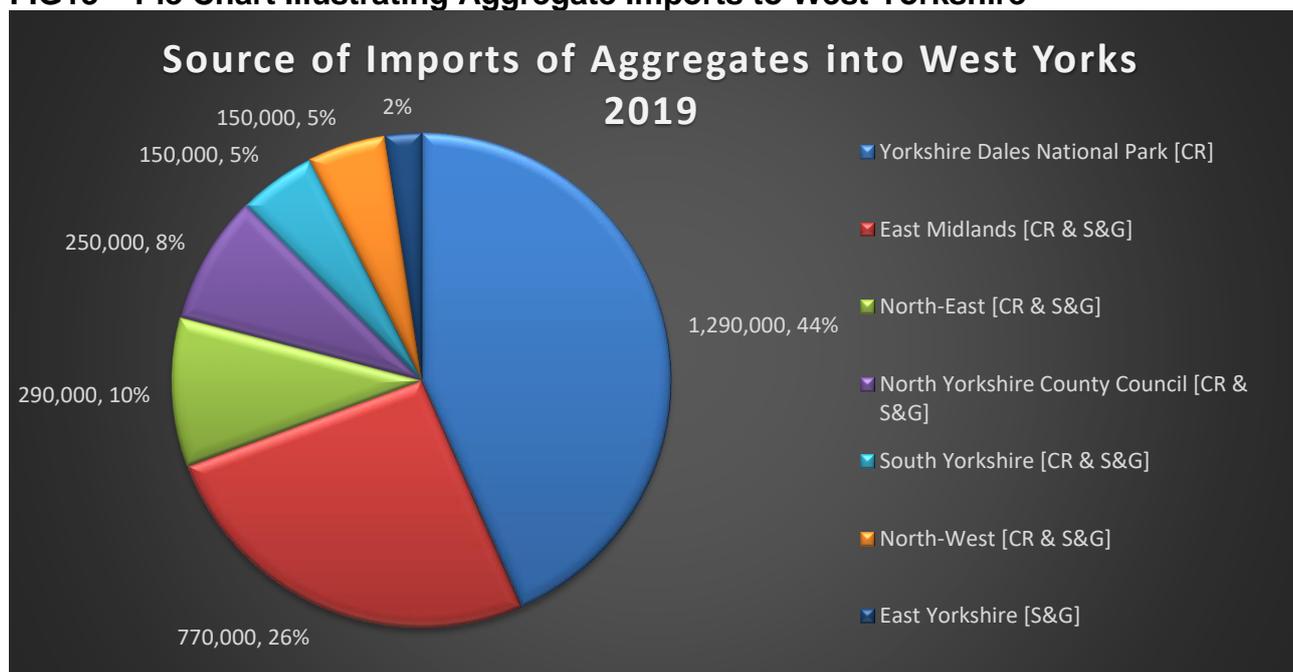
4.1.13. The main pertinent points arising from the data presented in the above tables, in terms of changes in the pattern of construction aggregate flows into West Yorkshire between 2014 and 2019 are considered to be:

- An apparent significant increase in crushed rock aggregate flows into West Yorkshire from the Yorkshire Dales National Park and Derbyshire;
- An apparent significant decrease in crushed rock aggregate flows into West Yorkshire from Doncaster and North Yorkshire;
- An apparent significant reduction in sand and gravel flows into West Yorkshire from North Yorkshire and (to a lesser extent) East Yorkshire;
- An apparent increase in sand and gravel flows into West Yorkshire from the North East (County Durham).

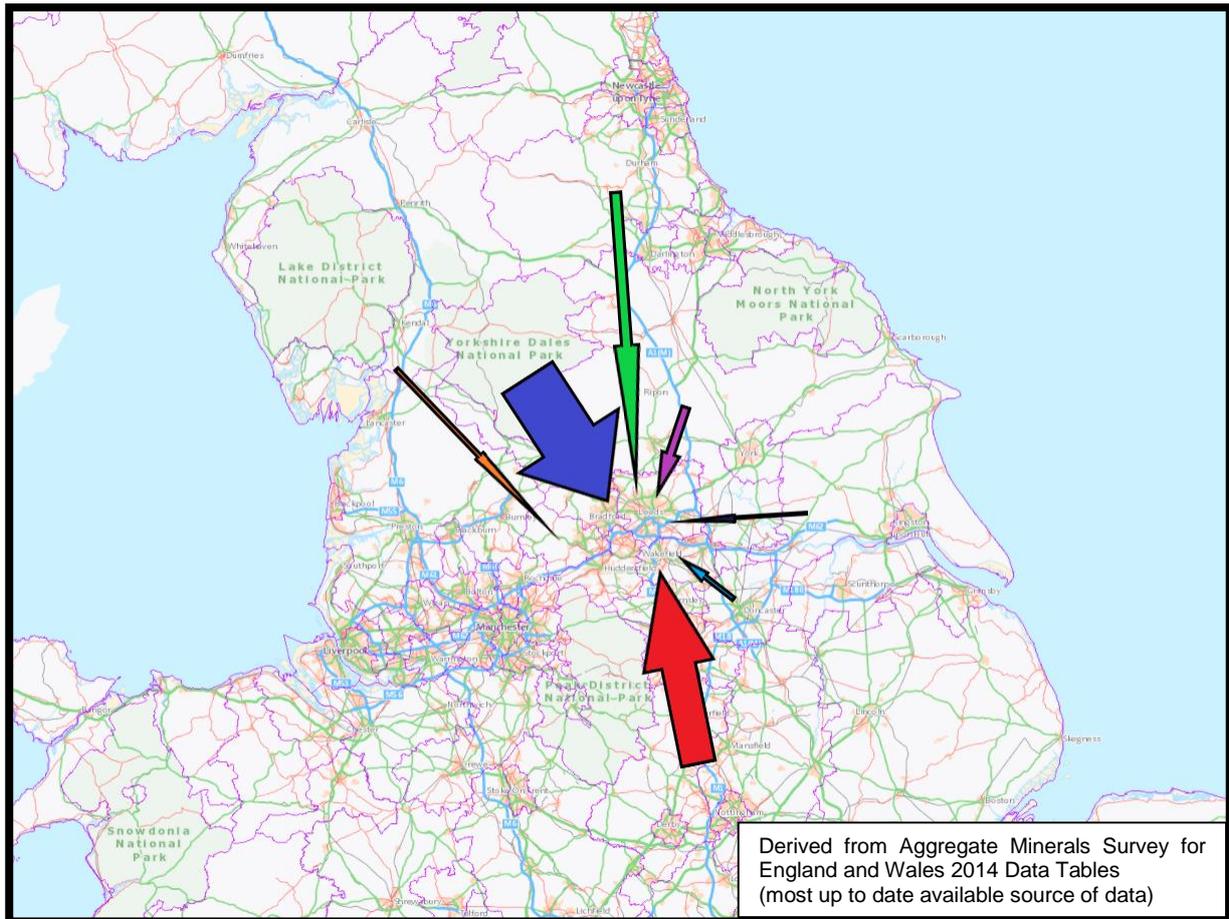
4.1.14. The very significant apparent change in minerals supply flows into West Yorkshire between 2014 and 2019 highlights the importance of regularly monitoring minerals supply information through the LAA. Without this information West Yorkshire MPAs would not be aware of the change in the key sources of the aggregates consumed within West Yorkshire and the relevant host Minerals Planning Authorities to discuss security of supply issues with. Furthermore, the increasing length of haulage distances and the consequent increased importance of shifting minerals to more sustainable modes of transportation would not be understood.

- 4.1.15. In addition to the primary aggregate flows identified above, the BGS data tables also indicate that smaller quantities of aggregates are supplied into West Yorkshire from a number of other locations, including: Staffordshire; Lancashire; Northumberland; Powys; and Rhondda Cynon Taff. This is again indicative of a shift in supply patterns to more distant locations. However supplies from these locations were identified as representing less than 1% of consumption and they should not be attributed too much significance - as the quantities could potentially be very small (with no lower threshold specified) and could represent small consignments of aggregate procured for a specialist purpose/ specific project rather than part of the general construction aggregate supply market.
- 4.1.16. The fact that aggregate flows into West Yorkshire appear to be shifting to more distant supply areas including Derbyshire and Durham is of some concern in terms of the increased environmental effects and climate change impacts associated with hauling minerals over longer distances. However, these impacts can be mitigated by modal shift of aggregate haulage onto rail and waterway – as has been promoted with some success in the Yorkshire Dales National Park. Consequently the apparent shifting of minerals supply patterns to more distant quarries places even more importance upon the need to facilitate aggregate haulage modal shift by investing in rail and waterway infrastructure upgrades and safeguarding rail depots and wharfs capable of offloading minerals in West Yorkshire.
- 4.1.17. Figure 14 below illustrates the estimated spatial distribution of aggregate flows into West Yorkshire, with the size of the arrow indicating the approximate relative quantity of aggregate estimated to flow from the producing area. A pie chart is also included at Figure 13 providing a more precise breakdown of the estimated sources of the construction aggregates supplied into West Yorkshire in 2019. As previously noted the data does not include the marine aggregates which are known to be supplied into West Yorkshire from the Humber Docks.

**FIG13 – Pie Chart Illustrating Aggregate Imports to West Yorkshire**



**FIG14 – Flow Map Illustrating Aggregate Imports to West Yorkshire**



- 4.1.18. 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. However, the data also indicates that minerals supply patterns are inherently dynamic with new supply routes opening up as flows contract from quarries within existing supply areas.
- 4.1.19. The Yorkshire Dales National Park remains far and away the most important supplier of crushed rock aggregates into West Yorkshire, with supplies from the National Park now accounting for over 50% of the crushed rock aggregates consumed within West Yorkshire. Significant quantities of crushed rock aggregates are also supplied from the East Midlands (Derbyshire, The Peak District and Leicestershire), with lesser, but still significant, quantities supplied from the North-East, North Yorkshire, South Yorkshire and the North-West.
- 4.1.20. In relation to Sand and Gravel, County Durham and the North Yorkshire County Council administrative area are highlighted as the key suppliers into West Yorkshire. Lesser, but still potentially significant, quantities of sand and gravel also thought to be transported into West Yorkshire from East Yorkshire, Nottinghamshire, Lincolnshire, Cheshire and Doncaster. There are also known to be substantial and increasing quantities of marine aggregates both barged and trucked into West Yorkshire and the rail and waterway routes between the Humber Docks and West Yorkshire Wharfs and Rail Depots should be seen as a key strategic aggregate supply routes.

4.1.21. As discussed further in following sections, it is clear, that planning for continuity in the supply of the aggregates consumed in West Yorkshire is far more dependent upon effectively cooperating with neighbouring authorities and safeguarding minerals transportation infrastructure than managing aggregate supplies within West Yorkshire itself. It is also clear that the future of aggregate extraction within the Yorkshire Dales National Park is of key strategic economic importance to West Yorkshire.

## 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. Sources of secondary aggregates are much more limited with the only power station producing pulverised fuel ash (pfa), Ferrybridge Power Station, now closed, albeit with two smaller new 68 MW multi-fuel power stations continuing to operate at the site. Several other multi-fuel or energy from waste power plants also operate within West Yorkshire which are also a potentially significant source of bottom ash derived secondary aggregate.

4.2.2. Total quantities of combustion wastes (primarily bottom ash) removed from West Yorkshire are recorded in the EA Waste Data Interrogator 2019 as:

Facility District	Site Name	Operator	Waste Code	SOC Sub Category	Recorded Destination	Tonnes Removed
Wakefield	Ferrybridge Multifuel 2	Ferrybridge MFE 2 Limited	19 01 12	Combustion wastes	Wakefield	21,894
Wakefield	Ferrybridge Multifuel Plant	Ferrybridge MFE Limited	19 01 12	Combustion wastes	West Yorkshire	26,400
Wakefield	Ferrybridge Multifuel Plant	Ferrybridge MFE Limited	19 01 12	Combustion wastes	Sheffield	102,816
Leeds	Leeds Recycling & Energy Recovery Facility	Veolia ES Leeds Ltd	19 01 12	Combustion wastes	Sheffield	26,392
Leeds	Knostrop Clinical Waste Incinerator	SRCL Ltd	19 01 12	Combustion wastes	Leeds	662,643
Kirklees	Kirklees Energy from Waste Plant	Suez Recycling And Recovery Kirklees Ltd	19 01 12	Combustion wastes	Stockton-on-Tees	26,099

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. Spoil from Prince of Wales Colliery has been used as bulk fill but not as an aggregate.

4.2.4. Several unrestored spoil tip 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. The large former Prince of Wales Colliery Spoil Tip is currently under restoration and will become a new country park as part of a 917-home residential development approved on the former colliery land. Market interest in colliery

spoil exploitation may be more likely to be shown in the current spoil tip locations in North Yorkshire associated with the closed Kellingley colliery.

4.2.5. Paragraph 210(b) of the National Planning Policy Framework (NPPF) 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, whilst aiming to source minerals supplies indigenously. NPPF paragraph 213 confirms that Local Aggregates Assessments should be based upon an assessment of all supply options (including marine dredged, secondary and recycled sources). WRAP defines recycled and secondary Aggregates (RSA) as follows:

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

*Secondary Aggregates: usually by-products of other industrial processes not previously used in construction. Secondary aggregates can be further subdivided 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).*

4.2.6. RSA can include the following materials:

**TAB18 – Types of Recycled and Secondary Aggregate<sup>15</sup>**

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

4.2.7. Recycled Aggregate is primarily produced from construction, demolition and excavation (C,D&E) waste. The last updated document that looked at C,D&E arisings was the WEST YORKSHIRE COMBINED AUTHORITY WASTE NEEDS ASSESSMENT CAPACITY GAP ANALYSIS – Sep 2017 which utilised 2015 data. A total of 2,051,695 tonnes of CD&E waste generated in West Yorkshire was received at permitted waste management sites in 2015 consisting of 571,145 tonnes of construction & demolition waste and 1,480,248 tonnes of excavation waste.

<sup>15</sup> Source: WRAP, 2013, Available online at: [http://aggregain.wrap.org.uk/more\\_information.html](http://aggregain.wrap.org.uk/more_information.html)

4.2.8. Most CD&E waste originating from West Yorkshire is managed within West Yorkshire whilst the only significant "exports" were to adjacent authorities within the Yorkshire and Humberside region. Exported CD&E waste accounted for less than 10% of estimated arisings and 92% of these exports remained within the Yorkshire and Humberside region.

4.2.9. Whilst over 90% of CD&E waste is managed within the sub region there is a significant transfer of this waste between the individual West Yorkshire Authorities due to the location of landfill and processing plants within different authorities. Table 19 below therefore distributes the arisings of CD&E waste by population distribution. This table and the associated pie charts have been extracted from the draft West Yorkshire Combined Authority Waste Needs Assessment Capacity Gap.

**TAB19 – Estimated 2015 West Yorks CD&E arisings distributed by population (tonnes)**

Authority	C&D Landfill	C&D Recycling	Excavation Landfill	Excavation Recycling
Bradford City	26,162	106,868	287,669	56,928
Calderdale	10,265	41,929	112,864	22,335
Kirklees	21,392	87,382	235,215	46,548
Leeds	38,125	155,735	419,207	82,958
Wakefield	16,439	67,150	180,754	35,770
<b>Totals</b>	<b>112,384</b>	<b>459,063</b>	<b>1,235,709</b>	<b>244,539</b>
<b>WYCA</b>	<b>Total C&amp;D Arisings 571,447</b>		<b>Total Excavation Arisings 1,480,248</b>	

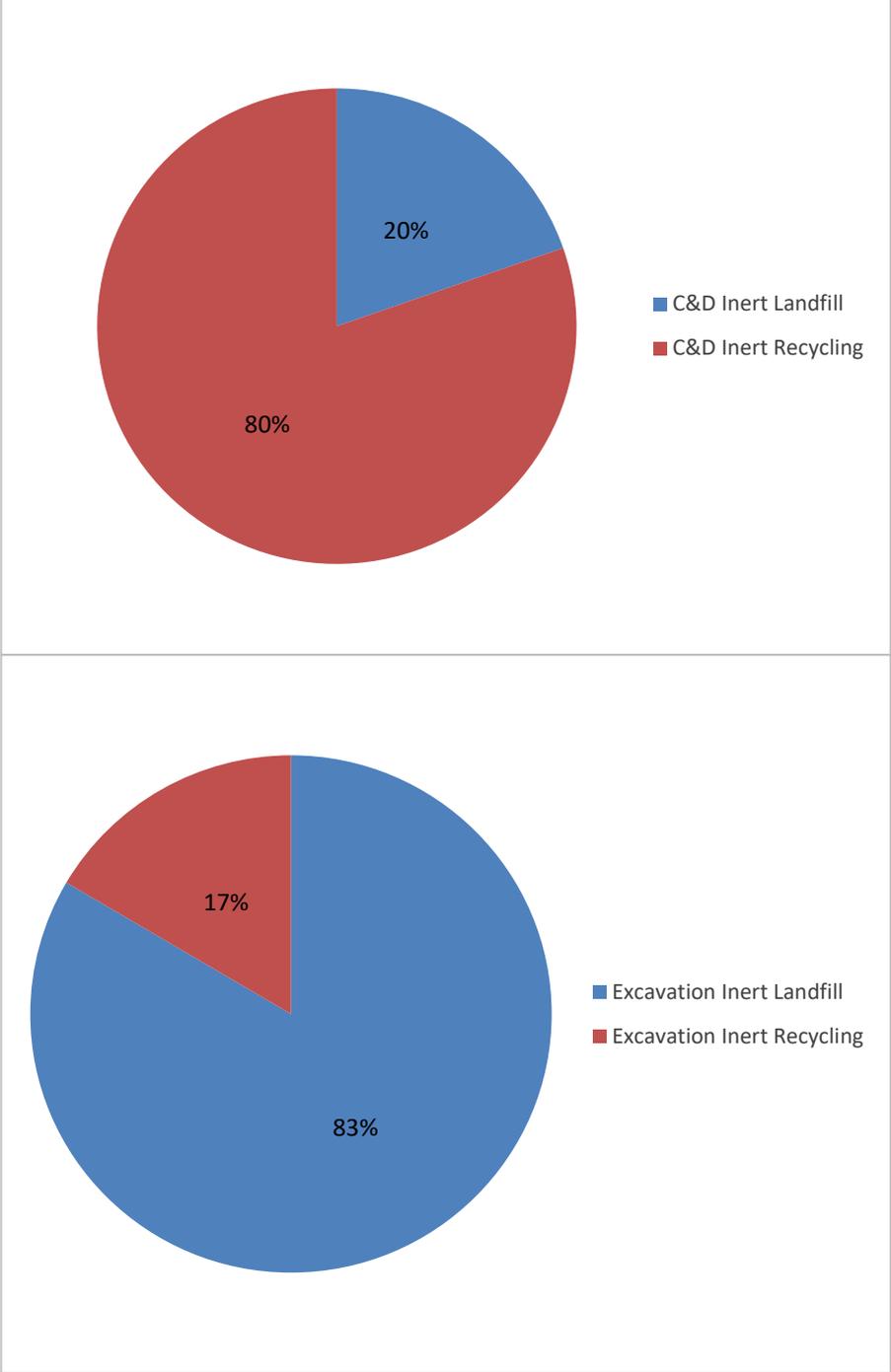
4.2.10. The figures set out in table 19 do not represent the total quantity of construction and demolition wastes produced in West Yorkshire, but rather the total quantities of such waste received at permitted facilities – i.e. sites where there is a permit in place issued by the Environment Agency. The figures therefore neither confirm the total quantity of the potential RSA resource within West Yorkshire nor the proportion of this resource which is actually used as RSA.

4.2.11. To attempt to understand better the fate of construction and demolition wastes treated within West Yorkshire table TAB20 below and FIG 15 and 16 overleaf break down the figures into the type of facility where the waste was received. As can be seen 80% of the recorded construction and demolition waste was recycled, the majority of which will have been used to produce Recycled Aggregate. The reverse is true in relation to excavation waste, with over 80% of this material consigned to landfill.

**TAB20 – Management of Construction and Demolition Waste W Yorks 2015**

Facility Type	Tonnes Received	% of Total
C&D Landfill	112,384	20%
C&D Recycling	459,063	80%
<b>C&amp;D Total</b>	<b>571,447</b>	
Excavation Landfill	1,235,709	83%
Excavation Recycling	244,539	17%
<b>Excavation Waste Total</b>	<b>1,480,248</b>	

**FIG15&16 – C&D&E arisings for West Yorks by management route (2015)**



4.2.12. It is acknowledged that the above data is from 2013 and is now several years old. Consequently, data has been gathered from the EA produced Waste Data Interrogator 2019 in order to establish the degree to which the position is likely to have changed since 2013. The relevant data is presented in table 21 below and indicates that between 2013 and 2019 total deposits in West Yorkshire waste transfer and treatment sites has increased by C. 50% - with deposits at physical treatment facilities (including aggregate recycling sites) increasing by C. 100%. Consequently, the figures set out above are likely to be a significant underestimate of the quantities of construction, demolition and excavation waste treated within West Yorkshire and the consequent latent potential for recycled aggregate production.

**TAB21 - Yorkshire and the Humber: Waste deposit trends: Transfer and treatment deposits by site type, waste type and sub-region from 2013 and 2019<sup>16</sup>**

All figures are provided in 000s tonnes

Year	Site Type		Sub Region				YORKSHIRE AND THE HUMBER
			Former Humberside	North Yorkshire	South Yorkshire	West Yorkshire	
2013	Transfer	Transfer	1,385	454	1,446	1,060	4,345
		Civic amenity	83	70	68	271	493
	<b>Transfer Total</b>		<b>1,468</b>	<b>524</b>	<b>1,514</b>	<b>1,332</b>	<b>4,838</b>
	Treatment	Material recovery	93	122	160	740	1,115
		Physical	821	196	1,072	831	2,919
		Physico-chemical	67	30	169	279	546
		Chemical	-	-	83	245	327
		Composting	227	106	141	95	570
		Biological	271	4	49	78	402
	<b>Treatment Total</b>		<b>1,480</b>	<b>458</b>	<b>1,673</b>	<b>2,268</b>	<b>5,879</b>
	MRS	Vehicle depollution	5	16	79	79	179
		Metal recycling	263	39	753	299	1,355
	<b>MRS Total</b>		<b>268</b>	<b>56</b>	<b>832</b>	<b>378</b>	<b>1,534</b>
<b>2013 Total</b>			<b>3,216</b>	<b>1,038</b>	<b>4,019</b>	<b>3,977</b>	<b>12,250</b>
2019	Transfer	Transfer	1,501	481	1,552	1,088	4,622
		Civic amenity	101	67	68	231	467
	<b>Transfer Total</b>		<b>1,602</b>	<b>548</b>	<b>1,620</b>	<b>1,319</b>	<b>5,089</b>
	Treatment	Material recovery	67	87	324	865	1,343
		Physical	2,584	491	1,464	1,484	6,023
		Physico-chemical	180	-	14	142	336
		Chemical	-	-	53	194	247
		Composting	145	80	82	168	475
	Biological	652	282	251	2,261	3,446	
	<b>Treatment Total</b>		<b>3,628</b>	<b>940</b>	<b>2,188</b>	<b>5,114</b>	<b>11,870</b>
MRS	Vehicle depollution	23	23	26	105	177	
	Metal recycling	491	30	760	334	1,615	
<b>MRS Total</b>		<b>514</b>	<b>53</b>	<b>786</b>	<b>439</b>	<b>1,792</b>	
<b>2019 Total</b>			<b>5,744</b>	<b>1,541</b>	<b>4,594</b>	<b>6,872</b>	<b>18,751</b>

4.2.13. In recent years RSA producers have been included in the annual aggregate survey in order to gain a more accurate understanding of RSA production in West Yorkshire. Upon the basis of returns from this survey, combined with estimates where appropriate, the figures set out in table TAB22 below can be derived. Please note that the figures for Wakefield and Kirklees are estimates based upon population distribution, as both authorities have indicated that they have no reliable data in relation RSA production.

<sup>16</sup> Environment Agency, 2019. 2019 Waste Data Interrogator

## TAB22 – West Yorkshire Local Authority Estimates of RSA Production

	<b>2020 RSA Sales Including Estimates (Tonnes)</b>
<b>Leeds</b>	140,000
<b>Bradford</b>	270,000
<b>Kirklees</b>	60,000
<b>Wakefield</b>	150,00
<b>Calderdale</b>	90,000
<b>Total</b>	<b>710,000</b>

- 4.2.14. The approximately 0.71 million tonnes of RSA estimated to have been produced in West Yorkshire in 2020 is a reduction of 150,000 tonnes from the 860,000-tonne estimate reported in the WYLAA 2019. The difference primarily relates to a reduction in the reported quantities from Leeds. The data for Bradford and Wakefield are estimates informed by previous returns. Given the level of estimation which has been used to arrive at the data included in TAB19 and the variability in the Mineral Planning Authority reporting approaches and reliability, the data set out in the table should be considered to possess a relatively wide margin for error/ low degree of confidence. It should also be born in mind that the quality and characteristics of RSA varies widely.
- 4.2.15. Some higher quality recycled aggregate products are now emerging, for example crushed concrete only, which can be re-incorporated as a percentage of new ready-mix concrete. Similarly, some highway planings are being reincorporated into new asphalt. One operator now claims a blend of recycled aggregate equivalent to carboniferous limestone hard core which can be successfully used in areas of paving and some load bearing reinstatements. It is likely to remain the case that a high proportion of the RSA aggregate produced is not suitable for high specification uses.
- 4.2.16. 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. The Bradford Waste Management DPD also safeguards aggregate recycling sites under policy WDM3, as does the emerging Calderdale Local Plan under draft policy WA3 and the adopted Kirklees Local Plan under policy LP39. The adopted Wakefield Local Development Framework does not safeguard aggregate recycling facilities.

### **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.
- 4.3.4. Nonetheless, the apparent decrease in Sand and Gravel consumption in West Yorkshire, between 2014 and 2019 indicated by the national aggregate monitoring report data for those two years appears to support the suggestion that substitution of sand and gravel for crushed rock in concrete making may be increasingly taking place.
- 4.3.5. Crushed Dolomitic Limestone is one of the key aggregates capable of being used in concrete manufacture. The recent report on The Quarrying of Magnesian Limestone for Aggregate in the Yorkshire and Humber Region (2017) produced by WYCA identifies that substantial reserves of Magnesian Limestones potentially suitable for concrete manufacture exist within North and South Yorkshire and Derbyshire.
- 4.3.6. It is recognised that Magnesian Limestone will only ever supply part of the construction aggregate market, with a significant proportion of the resource only suitable for lower specification uses. However, the importance of this resource as a potential substitute concreting aggregate should not be overlooked. Further exploitation of this resource may comprise part of the strategy to compensate for anticipated constraints on the supply of other land won aggregates, such as sand and gravel, in the future.

## 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. The Crown Estate report that marine aggregates now account for approximately 20% of consumption in England and Wales.

4.4.2. There are 10 production licences for both sand and gravel, in the Humber marine region with an estimated total lifespan of 26 years' worth of production if production is maintained at historic average levels. A table illustrating the estimated permitted reserves, rate of dredging and reserve life, from the Crown Estate Marine Aggregates Capability & Portfolio Report 2020 is reproduced below:

**FIG17 – Statistics on Marine Aggregate Reserves<sup>17</sup>**

Region	Total current primary reserves	10-year average annual offtake	3-year average annual offtake	Peak annual offtake during 10-year period	Annual permitted offtake (as at July 2020)	Regional reserve life at 10-year average annual offtake
		Primary (construction aggregate)				
Humber	50.35	2.02	2.72	3.50	6.88	24.93
East Coast	62.49	4.41	4.20	5.28	7.33	14.17
Thames Estuary	31.61	1.20	1.64	1.94	3.60	26.34
East English Channel	88.18	3.80	4.11	4.65	8.97	23.21
South Coast	79.46	3.40	3.51	3.92	7.83	23.37
South West	33.75	1.14	1.34	1.38	2.70	29.61
North West	10.33	0.30	0.28	0.38	1.30	34.43
<b>Total</b>	<b>356.16</b>	<b>16.26</b>	<b>17.81</b>	<b>18.10</b>	<b>38.59</b>	<b>21.90</b>

4.4.3. The Crown Estate advise that, although marine sand and gravel resources are vast, the resource is finite and therefore, in consultation with industry, the Crown Estate are seeking to progressively reduce the area of seabed which is licensed for dredging year on year. Nonetheless, as discussed elsewhere within this LAA, marine aggregates are likely to become an increasingly important component of minerals supply as current land won supplies from North Yorkshire and elsewhere become increasingly restricted.

4.4.4. The Marine Aggregates Crown Estate Licences summary of statistics 2020 indicates that within the Humber Dredging Area During 2020, 3.52 million tonnes of primary aggregate was dredged from a permitted licensed tonnage of 6.88 million tonnes. In addition, 0.7 million tonnes were dredged for beach nourishment. Approximately 192,000 tonnes of marine aggregate extracted from crown estate licensed areas was landed at wharves on the River

<sup>17</sup> The Crown Estates, 2021. Marine Aggregates Capability and Portfolio 2020

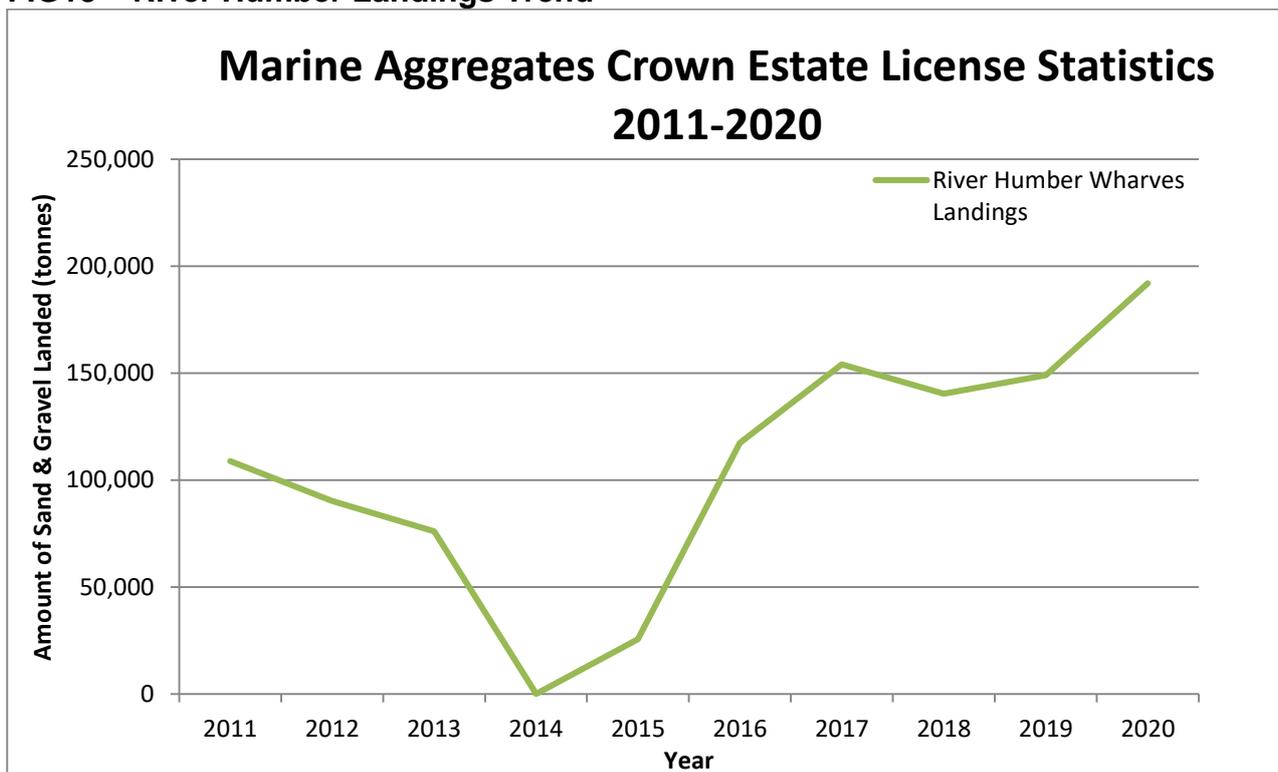
Humber. In addition, 291,000 were landed at wharves on the River Tees and 269,000 tonnes were landed at wharves on the Tyne<sup>18</sup>.

4.4.5. Statistics do show a generally upwards trend in Humber landings from 2015 to 2018, which appears to have levelled out between 2017 and 2018, before continuing. The dip in landings between 2013 and 2016 is likely to have been due to temporary disruption to landing facilities at the Humber Docks. Nonetheless the data does appear to indicate a long term trend of steadily increasing quantities of marine dredged sand and gravel being landed at the Humber Docks, as illustrated by the table and chart below, which may be indicative of increases in demand, improving competitiveness and or constraints on land won resources:

**TAB23 – River Humber Landings Stats**

Marine Aggregates Crown Estate License Statistics 2011-2018										
*Figures in tonnes	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
River Humber Wharves Landings	108,927	90,194	76,102	0	25,561	117,417	154,159	140,304	149,000	192,000

**FIG18 – River Humber Landings Trend**

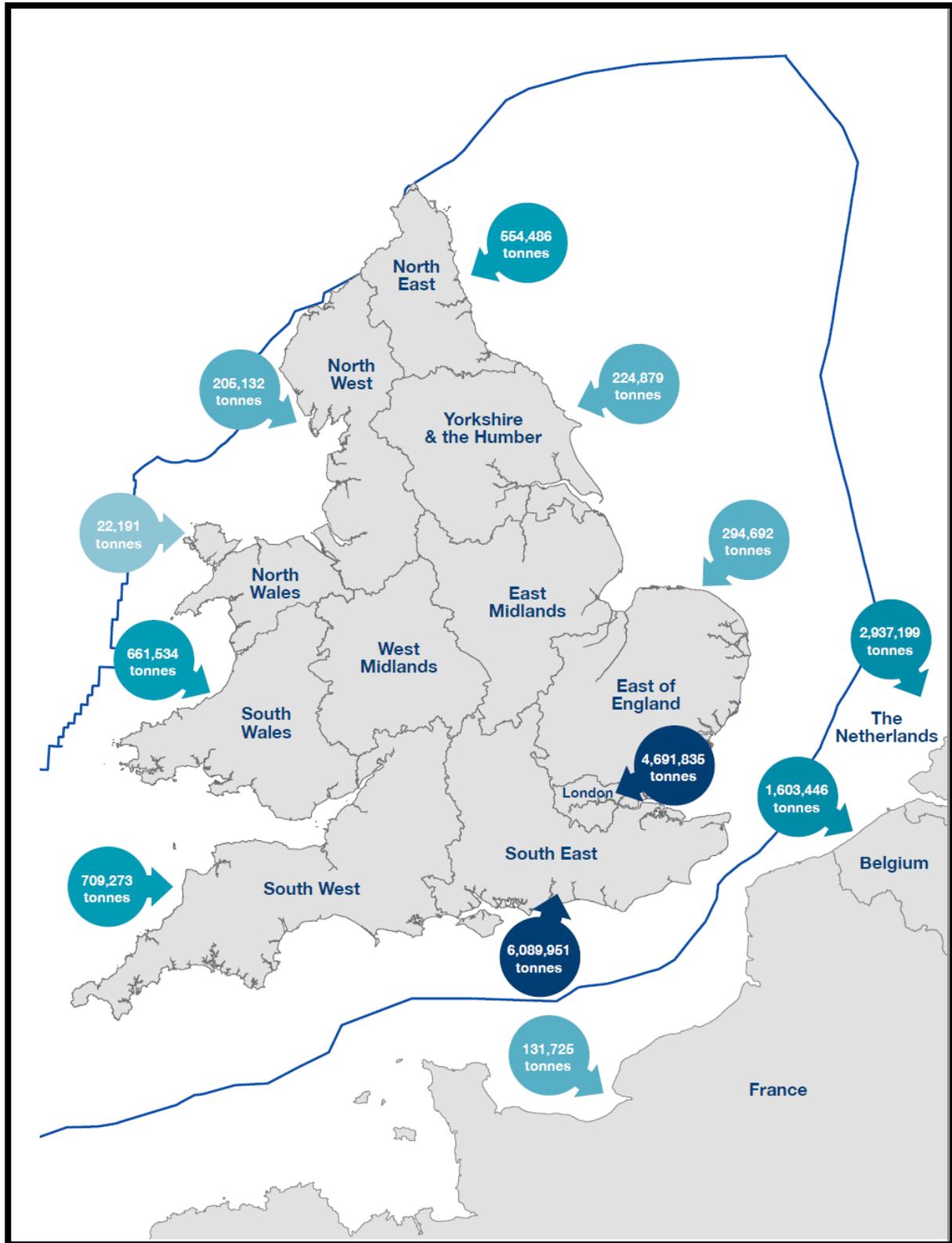


4.4.6. The figures set out above indicate that marine aggregates are underexploited within the Yorkshire and Humber Region relative to the national picture. The industry has confirmed that currently they consider licenced extraction areas within the Humber dredging area to be under-utilised. Furthermore, the data indicates that almost three quarters of the material dredged from the Humber Marine Area is exported to mainland Europe (76.2%).

<sup>18</sup> Statistics obtained from Marine Aggregates The Crown Estate Licenses Summary of Statistics 2020.

4.4.7. This is very different position to other parts of the country. In London over 50% of primary aggregate supply is now from marine dredged sand and gravel. The diagram overleaf, which illustrates this point, is reproduced from the Crown Estate Marine Aggregates Capability & Portfolio Report 2020:

**FIG19 – England and Wales Marine Dredged Aggregate Landing Statistics<sup>19</sup>**



<sup>19</sup> The Crown Estate, 2021. Marine Aggregates Capability & Portfolio 2020

- 4.4.8. 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.
- 4.4.9. The study explained that the cost of marine aggregate transportation from the Humber to the large markets of West and South Yorkshire were not (at the time) competitive with the price of land won aggregate hauled from Nottinghamshire and North Yorkshire into the conurbation. It suggested the gap is not very large and will narrow in the period from 2020 onwards as land-based extraction becomes more costly to sustain. The marine aggregate study indicated 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.
- 4.4.10. The findings of the marine aggregate study appear to be being borne out in reality with Leeds City Council reporting the following:

*“We are aware that AC Marine Aggregates had their first cargo into Hull in August 2015 and in total have brought in a further 100 consignments of approximately 6,500 tonnes per consignment. Since July 2020 a weekly barge load of 1,000 tonnes per week has been received at the safeguarded Knostrop Depot, Leeds on the Aire and Calder Navigation (around 50,000 tonnes per annum). This was temporarily halted in April 2021 due to a breach of the canal at East Cowick but is due to re-commence in October 2021. AC Marine Aggregates estimate they could bring 5,000 tonnes of marine aggregate per week into West Yorkshire, with 3,000 tonnes going to Whitwood near Castleford and 2,000 tonnes going to Knostrop Depot, Leeds. This would be available for onward distribution throughout West Yorkshire.”*

- 4.4.11. Both Leeds City Council and the Canal and River Trust have reported an increase in interest in schemes involving the transportation and use of marine aggregates. Leeds City Council have additionally noted a recent planning application for the development of a concrete plant designed to utilise marine aggregates. Marine aggregates are already thought to be being trucked into Leeds for concrete manufacture and potentially elsewhere in West Yorkshire, although no data on the quantities involved is currently available. In addition to the currently operating Knostrop Wharf, 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 (known as Port of Leeds). This new wharf is expected to distribute approximately 2,000 tonnes per week of aggregate (sand and gravel) arriving from the Humber Ports.
- 4.4.12. These imports are not reflected in the findings of the national Aggregate Minerals Survey 2019, which reported that West Yorkshire neither consumed nor imported any marine aggregates in 2019 and that Yorkshire and Humber possess no aggregate wharves. However, this is clearly incorrect and reflects the limitations of the survey in terms of the comprehensiveness of this coverage of aggregate wharves and the robustness of data on sales

by destination. As it stands there appears to be no reliable data on marine aggregate other than the dredging and landing statistics and associated information produced by the Crown Estate.

- 4.4.13. 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. However, there are a number of areas for immediate action which are already clear including the need to more effectively safeguard wharfs and rail sidings from being compromised by incompatible development and the need to invest in upgrading waterway and rail infrastructure.
- 4.4.14. The Canal and River Trust have confirmed their estimate of the capacity of existing and proposed wharfs on the Aire and Calder Navigation as set out in Table TAB2 of this report. However, they have also highlighted the need for waterway infrastructure investment if this capacity is to be realised. The Canal and River Trust have also advised that a source of funding for this investment has not yet been identified despite investment in commercial waterway infrastructure being key to unlocking the potential for more sustainable aggregate transportation networks and in particular access to the West Yorkshire market for Marine Aggregates.
- 4.4.15. The progress which has been made in this area to-date includes the awarding of the Canal & River Trust of a 1.7 million euro grant from the EU Interreg funding programme (North Sea region) in July 2017 to help them to deliver their Freight aspirations for the Aire & Calder and their proposed Inland Port of Leeds. The funding was to deliver the Trust's 'Inland Waterway Transport Solutions' (IWTS) project.
- 4.4.16. The primary aim of IWTS is to improve the infrastructure of smaller waterways to help them realise their potential. The C&RT have indicated that the IWTS project will provide funding for a costed technical and engineering study of the Aire & Calder bottlenecks (primarily Bullholme Lock) with a view to increasing the size of ship that can sail the navigation, and subsequently the amount of freight that can be carried. Other ancillary items will also be financed through the project that will help to deliver freight aspirations for the Aire & Calder. However further funding is required in order to implement many of the waterway infrastructure upgrades and deliver the Port of Leeds project.
- 4.4.17. 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. Similarly, draft policy LP 39 of the adopted Kirklees Local Plan seeks to protect

strategic minerals infrastructure within Kirklees including several railway sidings and a wharf on the Calder and Hebble Navigation formerly used to offload coal for the former Thornhill Power Station.

- 4.4.18. The importance of marine aggregates to the West Yorkshire construction materials market is clearly increasing and the limitations of the data currently available mean that it is not possible to publish any statistics for imports of marine aggregates into West Yorkshire or the proportion of total consumption which marine aggregates account for. Deducing this data through West Yorkshire specific survey work is likely to be problematic as marine aggregates could be received at a number of different sites including minerals processing facilities, rail depots and wharfs and the primary landing ports are remote from West Yorkshire and will not necessarily either keep or release accurate 'sales by destination' data. However this subject will be kept under review during the preparation of future annual Local Aggregate Assessment reports and consideration given to whether sufficient data has become available for a provision figure for marine aggregates to be derived to supplement the data set out in this report.

#### **4.5. Potential for Improved Aggregate Rail Freight Connections**

- 4.5.1. The availability of infrastructure to allow aggregate to be effectively transported and distributed by rail, including the provision of adequate off-loading facilities, is a particularly significant issue for West Yorkshire. This is for four principle reasons:

(1) West Yorkshire is reliant upon aggregates transported from outside of the sub-region, an increasing proportion of which is likely to be distributed by rail in the future, particular in relation to quarries located within the Yorkshire Dales National Park;

(2) Existing rail off-loading facilities at Cross Green in Leeds are limited;

(3) Poor Air Quality is a particular problem for West Yorkshire, as described in the West Yorkshire Low Emissions Strategy and the Transport Strategy 2040. Road haulage of freight, including aggregates, makes a disproportionate contribution to air pollution, enhancement of rail infrastructure may facilitate a transition towards an increasing proportion of aggregates being transported by rail freight, with consequent air quality benefits; and

(4) Marine aggregates may provide for an increasing proportion of the sand and gravel consumed in West Yorkshire in the future, with increasing constraints on the availability of land-won sand and gravel from North Yorkshire. The Humber Docks are rail connected and the provision of adequate infrastructure to allow marine aggregates from the Humber Docks to be transport to, and off-loaded within, West Yorkshire by rail, alongside potential barge transportation options, may help to facilitate a sustainable shift to this potential new aggregate supply source.

- 4.5.2. In terms of the importance of rail to the current minerals supply flows into West Yorkshire it should be noted that aggregates from the Yorkshire Dales National Park (YDNP) provide for a very significant proportion of West Yorkshire's aggregate consumption, particularly in terms of high specification aggregates. A number of the quarries within the YDNP are now rail connected and the YDNP Local Plan is seeking a minimum of a 50% reduction in the road haulage of quarry products and is consequently imposing increasingly tight restrictions on quarry HGV movements. The aggregate transported by rail from quarries in the Yorkshire Dales is currently primarily offloaded at the rail aggregate depots at Cross Green in Leeds from where it is processed and transported to consumers within the relevant market area via HGV.
- 4.5.3. Aggregate is transported into Leeds by rail from Swinden Quarry, and also from Ingleton Quarry, via Ribbleshead. Additionally, Acrow and Dry Rigg Quarries were reconnected to the Settle-Carlisle railway line in late 2015/early 2016. This reconnection took place as part of a £6 million scheme funded by Tarmac Holdings Ltd (the operator of the quarries and one of the aggregate depots at Cross Green). The project essentially involved the construction of a 0.7Km stretch of new railway ending in a fan siding at Acrow Quarry. At the time of opening it was estimated that the new rail link would allow approximately 16,000 aggregate lorry loads per year to be transported by rail, i.e. between 100,000 and 200,000 tonnes of aggregate<sup>20</sup>.
- 4.5.4. As part of the consultation on the WYLA 2017 the Yorkshire Dales National Park Authority made representation raising concerns about the limitations of the existing aggregate rail connections between Yorkshire Dales quarries and West Yorkshire. In particular they highlighted the shortcomings of the current infrastructure, with off-loading/ distribution depots only available at Cross Green (Leeds). Having limited off-loading points restricts the potential for aggregate transported by rail from the Yorkshire Dales to be sustainably distributed to all of West Yorkshire.
- 4.5.5. The Yorkshire Dales National Park Authority contend that the current restricted aggregate off-loading facilities available to quarry operators in the Yorkshire Dales limits the potential for increased rail haulage of minerals. Additionally recent discussions between the West Yorkshire Combined Authority and quarrying industry representatives indicate that, if adequate rail off-loading facilities are not provided within West Yorkshire, the consequence may be that aggregates which would otherwise be supplied into West Yorkshire would be transported further on to the south side of the West Yorkshire area bordering South Yorkshire and also potentially slightly further afield to serve the M1/A1/M18 and Sheffield road networks, in-effect bypassing West Yorkshire.
- 4.5.6. In addition new and expanded aggregate rail depots are likely to be required to provide the additional capacity necessary to offload marine dredged sand and gravel distributed by rail from the Humber Docks in the future. The issue of marine sand and gravel is discussed elsewhere in this report; however it should be noted that the increasing substitution of land won sand and gravel

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<sup>20</sup> RailEngineer, 5<sup>th</sup> January 2017, Rail News Report, *Get Connected*.

aggregates with marine won aggregates is a plausible future scenario to allow minerals demand to continue to be met in West Yorkshire in the long term. Therefore, in addition to the offloading facilities referred to in this section required to serve rail connected quarries in the Yorkshire Dales, there is likely to also be a need for additional facilities in locations which would best facilitate the offloading and distribution of marine aggregates.

4.5.7. Figure 20 below illustrates the assumed approximate area which could benefit from an additional rail depot to offload minerals transported from the Yorkshire Dales National Park:

**FIG20 – Rail Link Between West Yorkshire and the Yorkshire Dales**



Source: Base Map from Google Maps 2017

4.5.8. The deliverability of providing a new aggregate rail depot within West Yorkshire would depend upon both suitable land being available in an appropriate location and also either private or public sector investment being available to construct and operate the facility. The land use planning system can play its role through either safeguarding potentially suitable land or allocating sites for development.

4.5.9. It is recommended that research continues to understand (a) the potential scale of benefit which developing an addition aggregate rail offloading facility in West Yorkshire would bring about (b) the availability of potentially suitable sites for an aggregate rail depot and (c) the commercial viability of developing such a facility. If this further research indicates that the development of such a facility would be viable then opportunities for safeguarding or allocating the land which would be required to develop a new aggregate rail off-loading facility should be considered within relevant Development Plans, including the emerging Bradford and Leeds Local Plans.

## **4.6. Factors Which May Influence Future Demand**

- 4.6.1. 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.
- 4.6.2. 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.
- 4.6.3. 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 was 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 and has been further revised through and the Second Review July 2016 paper which was ratified by the Yorkshire and Humber AWP on 28 September 2016 and a recently published third review document.
- 4.6.4. 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).
- 4.6.5. This forecasting method is based upon a comparison of 10-year average annual net additional dwellings with the target future house building rates set out in relevant Local Development Plans. The figure arrived at within the NYLAA First Review document was 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.
- 4.6.6. The potential for one-off infrastructure projects to increase aggregate demand was also considered but the NYLAA first review 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.

4.6.7. 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 2021, comparing 10 year average annual net additional dwellings statistics 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 live housing data tables published by the government and the emerging or adopted Local Plan Documents for the relevant Local Authorities. The results of this comparison are set out in tables 24, 25 and 26 below, and illustrated in Figures 21, 22 and 23:

**TAB24 – Planned Housing Delivery in West Yorkshire**

District	Document	Stage	Date of Document	Planned Housing Delivery	Plan Period Start	Plan Period End	Plan Years	Annual Housing Delivery Target
Leeds	Core Strategy Selective Review	Adopted	Sep-19	54,352	2017	2033	16	3,397
Bradford	Bradford District Local Plan	Draft	Feb-21	30,672	2020	2038	18	1,704
Kirklees	Local Plan	Adopted	Feb-19	31,140	2013	2031	18	1,730
Wakefield	Local Plan	Draft	Oct-20	26,600	2017	2036	19	1,400
Calderdale	Publication Draft Local Plan	Draft	Aug-18	12,600	2018	2033	15	840

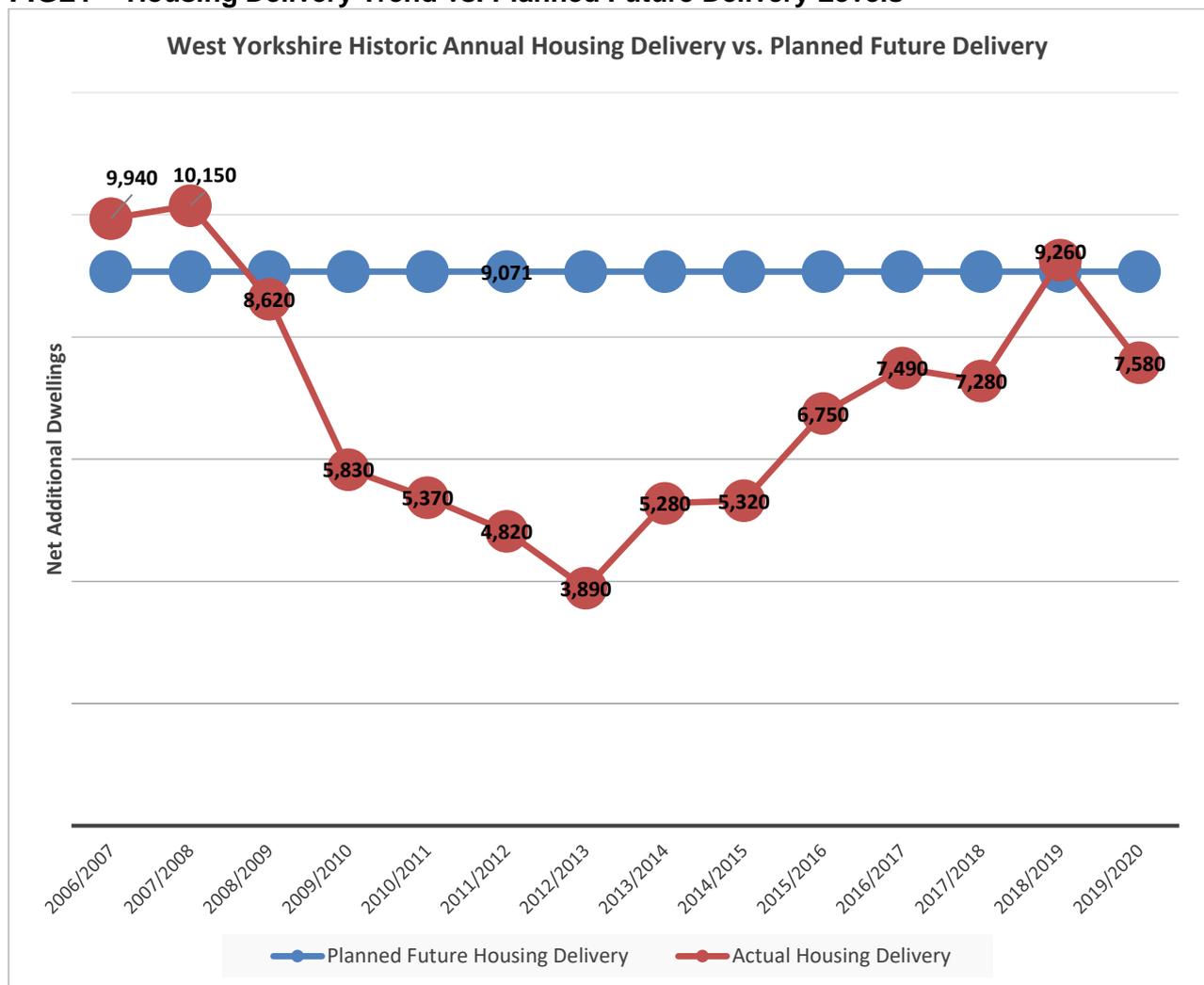
**TAB25 – Comparison of Housing Targets vs. Average Net Additional Dwellings**

	Population	Planned Annual Housing Requirement	2010-19 Average Net Additional Dwellings	Increase in Average Annual Net Additional Dwellings Required to Meet Planned Housing Delivery Target	% Uplift Required
Leeds	795,565	3,397	2,320	1,077	46%
Bradford	540,909	1,704	1,150	554	48%
Kirklees	441,772	1,730	1,050	680	65%
Wakefield	352,983	1,400	1,370	30	2%
Calderdale	210,958	840	420	420	100%
<b>W Yorks Total</b>	<b>2,342,186</b>	<b>9,071</b>	<b>6,310</b>	<b>2,761</b>	<b>44%</b>

**TAB26 – Government Net Additional Dwelling Data<sup>21</sup>**

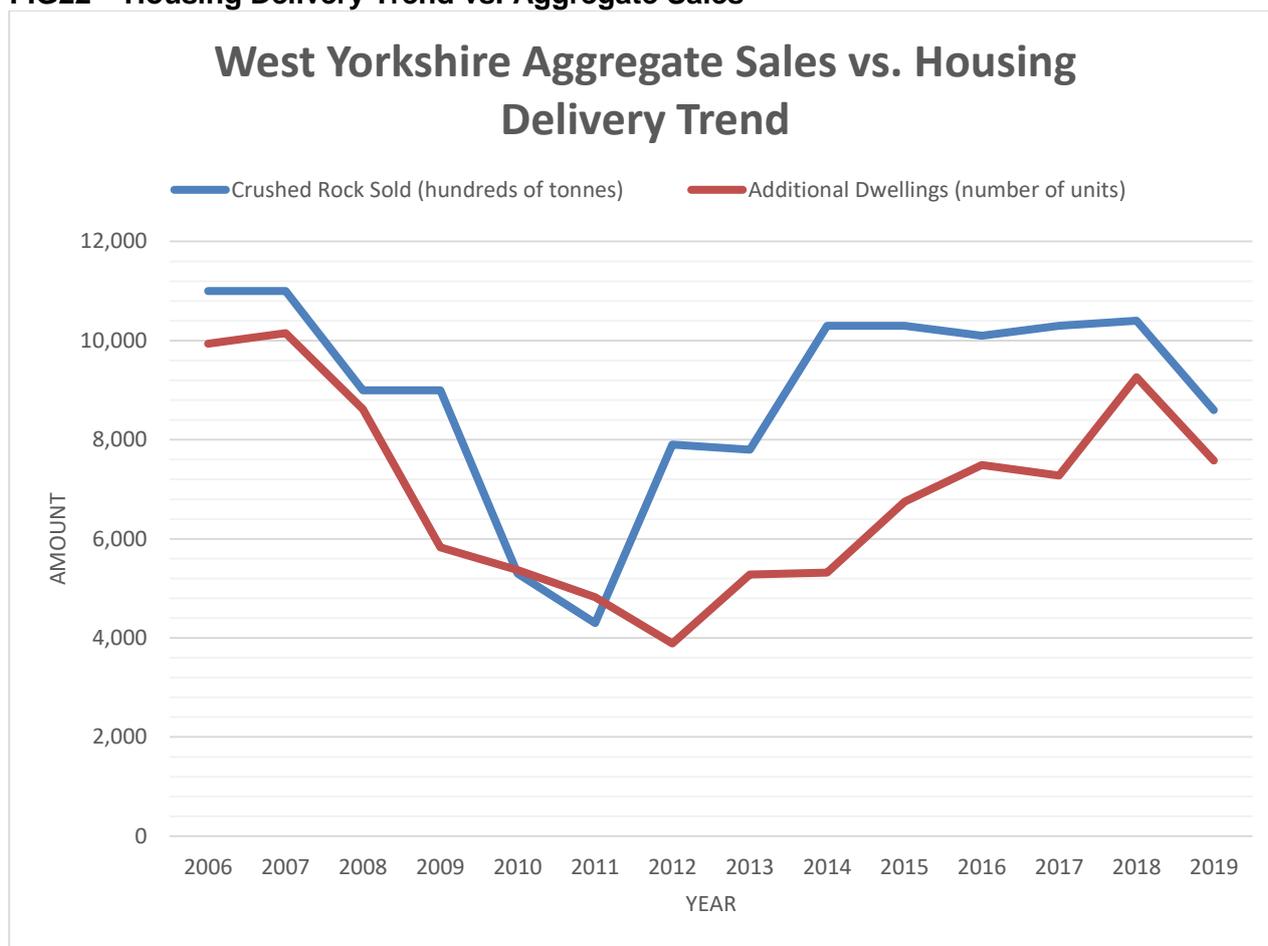
Year	District					West Yorkshire Total
	Leeds	Bradford	Kirklees	Wakefield	Calderdale	
2006/2007	2,820	2,340	2,660	840	1,280	9,940
2007/2008	3,070	1,400	2,680	1,690	1,310	10,150
2008/2009	3,320	2,200	1,490	1,120	490	8,620
2009/2010	1,730	1,760	1,090	680	570	5,830
2010/2011	1,180	1,460	1,250	970	510	5,370
2011/2012	1,930	730	940	850	370	4,820
2012/2013	1,560	720	580	530	500	3,890
2013/2014	2,230	870	1,040	810	330	5,280
2014/2015	1,980	1,130	520	1,130	560	5,320
2015/2016	2,470	900	1,130	1,920	330	6,750
2016/2017	2,820	1,490	980	1,820	380	7,490
2017/2018	2,280	1,620	1,330	1,760	290	7,280
2018/2019	3,430	1,610	1,550	2,110	560	9,260
2019/2020	3,330	1,010	1,130	1,760	350	7,580

**FIG21 – Housing Delivery Trend vs. Planned Future Delivery Levels**



<sup>21</sup> Table 122 Net additional dwellings<sup>1</sup> by local authority district, England, 2001-02 to 2019-20

**FIG22 – Housing Delivery Trend vs. Aggregate Sales**



**Note:** Please note that the net housing completion data included in the above tables and charts is data published by the government as part of their live tables on housing supply: net additional dwellings. Each of the West Yorkshire Local Authorities also publish their own housing completion figures, which may vary with the figures published by the government. The use of the government published housing completion figures in the LAA is to ensure consistency and for the specific purpose of calculating the uplift to be applied to the aggregate landbank. These figures should not be used for any other purpose and should not be seen as conflicting with or contradicting the different housing completion figures published by each of the West Yorkshire Local Authorities for planning and monitoring purposes.

- 4.6.8. Notwithstanding the apparently clear association between aggregate sales and housing delivery shown in Figure 22 above, there has been some debate about the precise 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. The NYLAA took a compromise position, as described in Section 1.9.
- 4.6.9. 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.

- 4.6.10. 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.
- 4.6.11. 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.
- 4.6.12. 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 2021 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.
- 4.6.13. The West Yorkshire specific data set out in table 25 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 44%. On this basis it is considered appropriate to plan for a 22% 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. Further details of the methodology used to calculate the uplift percentage can be found at Appendix 2 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:

**TAB27 – Aggregate Historic Sales Average**

<b>Aggregate Type</b>	<b>Average Annual Tonnage</b>
Sand and Gravel	80,000 (0.08mt)
Crushed Rock	920,000 (0.92mt)

5.2. Significant, mainly lower specification, reserves of crushed rock aggregate remain within West Yorkshire. However, as of 31 December 2020, only one active sand and gravel extraction site remains within West Yorkshire with dwindling reserves.

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. If adequate local supplies of aggregate cannot be maintained material will have to be procured from wider national or global supply markets at a potentially increased cost to the economy and the environment.

5.4. The objective in setting an aggregate apportionment for West Yorkshire is not to meet our own aggregate needs, as this is not possible. Instead, it 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. This is because the quality of the primary aggregates produced within West Yorkshire generally cannot meet more demanding specifications such as those applied to concreting aggregate or roadstone.

5.5. In summary the other relevant local information which has been considered in preparing the Local Aggregates Assessment for West Yorkshire 2021 is as set out in Section 4 and summarised in Table 28 overleaf:

**TAB28 – Summary of Other Data Relevant to Calculating Landbanks**

<b>Data Type</b>	<b>Annual Tonnage</b>
Estimate of West Yorkshire Sand and Gravel Consumption set out in the 2019 aggregate minerals survey for England and Wales	<b>466,000</b>
Estimate of West Yorkshire Crushed Rock Consumption set out in the 2019 aggregate minerals survey for England and Wales	<b>2,342,000</b>
Estimate of Recycled & Secondary Aggregate Produced in West Yorkshire in 2020	<b>710,000</b>
Estimate of Land Won Sand and Gravel Imported to West Yorkshire from other Regions/ Sub-Regions in 2019	<b>466,000</b>
Estimate of Land Won Crushed Rock Imported to West Yorkshire from other Regions/ Sub-Regions in 2019	<b>2,257,000</b>
Estimated Proportion of West Yorkshire Sand and Gravel Consumption Met by Imports in 2019 <sup>22</sup>	<b>100%</b>
Estimated Proportion of West Yorkshire Crushed Rock Aggregate Consumption Met by Imports in 2019	<b>96%</b>
Estimated Increase in Aggregate Production Required for Deliver Planned Increases in Housing Delivery within West Yorkshire	<b>22%</b>

5.6. On the basis of the information discussed in Section 4 of this report, ten-year sales averages alone are not considered to be adequate to use as the basis for calculating the aggregate landbanks for West Yorkshire. This is both because of the high very level of aggregate consumption within West Yorkshire relative to the rate of production, the low output of a number of quarries where landbanks are tied up. Additionally the historic sales average figure does not allow for the increase in aggregate production which would be required to deliver the planned level of house building within West Yorkshire over the next 15 years (with a 44% increase in house building required to meet anticipated housing needs). A strong relationship is apparent between housing delivery and aggregate production, as illustrated by Figure 22.

5.7. It is concluded that applying a 22% uplift to historic sales averages arrives at an apportionment figure which embodies some aspiration for West Yorkshire to play its role in providing for projected increased future house building requirements whilst remaining realistic and proportionate to the constraints of the West Yorkshire aggregate resource. The aggregate apportionments and landbank calculations set out in table 29 below are therefore proposed for the Local Aggregate Assessment for West Yorkshire 2021.

<sup>22</sup> As explained elsewhere in this report this figure is based upon 'sales by destination' BGS survey data and is not 100% accurate. In reality it is likely that a significant proportion of the sand and gravel produced at the Forge Lane site in Kirklees is consumed in West Yorkshire; however, it is certainly the case that the majority of West Yorkshire sand and gravel demand is met by imports.

## TAB29 - West Yorkshire Aggregate Landbanks 2020

Note: All Figures in Tonnes Unless Otherwise Stated	Reserve	Annual Sales Average 2011-2020	22% Uplifted Aggregate Apportionment	Landbank
<b>Sand and Gravel</b>	150,000	80,000	100,000	<b>1 Years 6 Months</b>
<b>Crushed Rock</b>	36,960,000	920,000	1,120,000	<b>33 Years 0 Months</b>

- 5.8. The Sand and Gravel landbank of 1 Year and 6 Months is well below the minimum landbank required by paragraph 213 of the National Planning Policy Framework (NPPF), indicating that the release of additional reserves is required. Sand and gravel reserves and extraction rates in West Yorkshire remain very low. The vast majority of the sand and gravel which is consumed within West Yorkshire is sourced from neighbouring mineral planning authorities, primarily North Yorkshire.
- 5.9. The crushed rock aggregate landbank of 33 Years and 0 Months is significantly greater than the 10-year minimum level required by the NPPF. However, crushed rock reserves remain below pre-recession levels and are distributed across a large number of quarries of varying sizes, many of which have very low crushed rock output. The reality is that West Yorkshire only possess a very small number of larger commercial aggregate quarries which supply significant quantities of aggregates into the construction market. The length of the crushed rock landbank should therefore not necessarily be seen as excessive or problematic, or to indicate that there is no economic need for the release of additional reserves, particularly in light of West Yorkshire's dependence upon neighbouring regions for the supply of higher specification crushed rock aggregates.
- 5.10. For geological reasons described in more detail elsewhere in this report, the stone resources which are worked within West Yorkshire are generally thought to be incapable of producing significant quantities of the higher specification crushed rock aggregates required for use in either road construction or concrete manufacture. Consequently, West Yorkshire will remain reliant upon the crushed rock aggregates produced in neighbouring authorities to meet the majority of its construction aggregate needs. The two principal sources for the Crushed Rock Aggregates consumed within West Yorkshire are the Yorkshire Dales National Park and Derbyshire. Quarries located within the Yorkshire Dales National Park supplied over half of the Crushed Rock Aggregates consumed within West Yorkshire in 2019 according to the data tables provided by the BGS in association with 2019 Aggregate Minerals survey.
- 5.11. In addition to the length of landbanks, other relevant information should be considered when assessing the need to release additional aggregate reserves. **The Key Messages** and relevant considerations when assessing proposals and allocations for minerals development and associated infrastructure are set out overleaf:

- i. **Additional aggregate supplies will be required-** Housing delivery has significantly improved in West Yorkshire in recent years; however, there remains a gap between the number of houses being built and the objectively assessed need for new housing. Additionally, a range of infrastructure projects are in the pipeline including pipeline including Mass Transit for West Yorkshire, Northern Powerhouse Rail and upgrades of the Trans-Pennine rail route and associated Rail Interchange upgrades. Additional aggregate supplies will be required if the housing delivery gap is to be filled and the construction aggregate demands of the planned infrastructure projects met.
- ii. **West Yorkshire currently makes a low contribution-** West Yorkshire makes a low contribution to the overall supply of construction aggregates within the Yorkshire and Humber Region, despite being a major aggregate consumer, particularly in relation to sand and gravel and high specification crushed rock aggregates.
- iii. **Sand and gravel significant shortfall-** Reserves and production of sand and gravel are at a **critically low level** within West Yorkshire. The landbank is at a level which indicates that the release of new reserves is required. The industry have noted that there is a national shortage and that it is of significant concern.
- iv. **Crushed rock landbank includes mainly lower specification material-** Crushed rock reserves remain relatively high within West Yorkshire; however, a substantial proportion of the currently permitted reserves are unsuitable for higher specification uses, such as for the manufacture of concrete or as roadstone.
- v. **West Yorkshire remains very reliant on neighbouring Mineral Planning Authorities-** To meet the majority of its aggregate needs, particularly for uses which demand higher specifications, West Yorkshire remains reliant on aggregate imports, primarily from quarries in the administrative areas of the Yorkshire Dales National Park Authority and Derbyshire.
- vi. **For road surfacing West Yorkshire remains strongly reliant on aggregate imported the Yorkshire Dales National Park-** To meet its needs for aggregate suitable for use as skid resistant road surfacing, West Yorkshire remains strongly reliant upon supplies of high specification (high Polished Stone Value) sandstone aggregates from quarries in the Yorkshire Dales National Park.
- vii. **Sustainable opportunities to increase aggregate supply in West Yorkshire-** Notwithstanding the extent of the crushed rock aggregate landbank, given West Yorkshire's reliance on adjoining authorities for higher specification aggregates, any sustainable opportunities to increase the supply of the generally lower specification aggregates produced within West Yorkshire should be considered upon their merits, particularly where such proposals would facilitate the indigenous production of building materials such as artificial stone products.
- viii. **Increase Recycled Aggregates-** Providing new and enhanced facilities for the production of recycled aggregates will assist in WY contribution to aggregate production & help to compensate for West Yorkshire's reliance on primary aggregates quarried from neighbouring authorities.
- ix. **Building Sand from Sandstone Quarries-** Production of sand from crushed rock at sandstone quarries in West Yorkshire, including building stone quarries, is a valuable additional/ alternate source of sand supply, particularly building sand.
- x. **Safeguarding Existing and Developing New Rail Sidings and Wharves-** Existing rail and wharf infrastructure should be safeguarded and potential new locations for aggregate wharves and rail depots should be identified within West Yorkshire to facilitate the sustainable transportation of both land won and marine aggregates into West Yorkshire by train and barge (particularly crushed rock from the Yorkshire Dales and marine aggregates landed at the Humber Docks). There is also current industry interest in utilising waterways to transport minerals internally within West Yorkshire – which should be supported. Removing HGVs from the road network to these transport modes would significantly improve Air Quality.

## 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. The NPPF confirms:

*Effective and on-going joint working between strategic policy-making authorities and relevant bodies is integral to the production of a positively prepared and justified strategy. In particular, joint working should help to determine where additional infrastructure is necessary, and whether development needs that cannot be met wholly within a particular plan area could be met elsewhere.*

*In order to demonstrate effective and on-going joint working, strategic policymaking authorities should prepare and maintain one or more statements of common ground, documenting the cross-boundary matters being addressed and progress in cooperating to address these.*

This LAA 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.

### 6.2. Securing the Necessary Aggregate

6.2.1. Bradford, Calderdale, Kirklees, Leeds and Wakefield Councils [together with Yorkshire Dales National Park Authority, NYCC, Doncaster Council, East Riding and Humberside and Derbyshire and the Peak District] 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 AWP's to ensure the development of a consistent and complementary policy approach towards minerals supply. The authorities will seek to incorporate 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 required to sustain the economy and deliver planned growth.
- 2) Sharing advice and information (including aggregate monitoring information) to complement the preparation of 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 the 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 the Duty to Cooperate the West Yorkshire authorities should seek agreement with the Minerals Planning Authorities for the areas which are the main sources of the aggregates supplied into West Yorkshire, to ensure that these authorities continue to provide for sustainable supplies of aggregates into West Yorkshire in their Local Plans. Such authorities include North Yorkshire County Council, East Riding, Doncaster, Derbyshire Yorkshire Dales and Lancashire.

6.3.2. Such an agreement has previously been 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 connectivity report confirmed that: 'Consideration should also be given to a similar endorsement between WYCA and Derbyshire CC'. The report also confirmed that:

'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/liasing with NYCC to discuss the particular connectivity issues for a range of minerals and waste matter'.

6.3.3. A meeting between the lead officer for Minerals and Waste Planning of the West Yorkshire Combined Authority/ Leeds City Region and representatives from Derbyshire CC took place, 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.

- 6.3.4. A meeting was held in October 2017 between minerals officers representing the West Yorkshire Combined Authority, and East Riding of Yorkshire and Hull City Councils. During this meeting, cross-boundary issues were discussed including the supplies of sand and gravel into West Yorkshire from East Yorkshire and also the potential for increased marine aggregate supply into West Yorkshire from landings at the Humber Docks. The importance of safeguarding the rail and wharf infrastructure within West Yorkshire which could facilitate the sustainable transportation of marine aggregates from the Humber was acknowledged.
- 6.3.5. It was agreed that aggregate movements from East Riding of Yorkshire to West Yorkshire had been taken into account in both the Humber LAA and the East Riding and Hull Aggregates Apportionment Background Paper. The Combined Authority was content that the proposed uplift in the East Riding/Hull primary aggregate apportionment figure for sand and gravel will contribute to the ongoing supply of sand and gravel to West Yorkshire.
- 6.3.6. One of the outcomes of the joint working which has been undertaken with neighbouring authorities is the production of a joint Report on Magnesian Limestone, which also encompasses the extent of the resource occurring within the North and South Yorkshire. This document has identified cross-boundary minerals planning issues associated with the supply of, and demand for, Magnesian Limestone and will help to inform the approach taken to planning for this resource in relevant Local Plans and Local Aggregates Assessments.
- 6.3.7. Moving forward the West Yorkshire Combined Authority recognises the importance of engaging with all relevant neighbouring authorities to ensure continuity of supplies of aggregates into the future. Although, representations have been to relevant authorities, discussions taken place at the relevant AWP meetings and the supply/demand for aggregates referred to in other authorities Local Plan/LAA work, it is recognised that further and updated liaison will be required in relation to the shifting patterns of sand and gravel supply from North Yorkshire, Nottinghamshire and the implications of the shift in aggregate production away from the National Parks, particularly in terms of High Specification Aggregates and the likely need for importation of aggregates from Lancashire.
- 6.3.8. In addition, the shift in minerals supply patterns identified within the AM2019 needs to be considered in future inter-MPA engagement. In particular the increased supply of minerals from the North East (primarily County Durham). Further dialogue should include consideration of how minerals are transported from these more distant quarries and whether anything could be done to better facilitate sustainable transportation options such as use of rail and waterways.
- 6.3.9. Engagement will also be required with a range of stakeholders in relation to the supply of marine aggregates and the potential for a more significant proportion of West Yorkshire's sand and gravel needs to be met from marine

dredged sources. Given the complexities of the supply chain for marine dredged sand and gravel, such liaison should involve the Crown Estate/ Marine Management Organisation as well as the Mineral Planning Authorities which host suitable landing wharfs and canal, rail and road transportation facilities. This is currently undertaken to some extent through the Yorkshire and Humber Aggregates Working Party.

- 6.3.10. Engagement will also be required with relevant transport route operators including Network Rail and the Canal and River Trust. Preceding sections of this report discusses the recent feasibility work initiated by the Canal and River Trust with a view to opening up canal/ navigation waterway routes for commercial transportation of goods between the Humber and Leeds. Progress towards fulfilling this objective will be monitored and will inform future inter-Mineral Planning Authority Discussions regarding marine sand and gravel opportunities, alongside other areas of work.
- 6.3.11. To this end a meeting was held in October 2017 between minerals officers representing the West Yorkshire Combined Authority and the Humber Area. During this meeting cross-boundary issues were discussed including the supplies of sand and gravel into West Yorkshire from East Yorkshire and also the potential for increased marine aggregate supply into West Yorkshire from landings at the Humber Docks. The importance of safeguarding the rail and wharf infrastructure within West Yorkshire which could facilitate the sustainable transportation of marine aggregates from the Humber was acknowledged.
- 6.3.12. It is acknowledged that the direct liaison and engagement with relevant authorities could be improved; however, the channels of communication and sharing of information remain open, directly and via the Y&H Aggregates Working Party.

## Appendix 1 - Active quarries which produce aggregate as at 31 December 2020

No.	QUARRY	OPERATOR	AGG TYPE
	<b>BRADFORD</b>		
1	Bank Top Quarry, Harden	M&M York Stone Products	Sandstone, grit
2	Naylor Hill Quarry, Haworth	Dennis Gillson & Son	Sandstone, grit
3	Bolton Woods Quarry, Bradford	Hard York Quarries	Sandstone, fine
	<b>CALDERDALE</b>		
4	Fly Flatts Delph Quarry, Warley	Rand & Asquith	Sandstone,
5	Gibb Lane Quarry/Delph Hill Quarry	Mr J Smith	Sandstone
6	Upper Pule/Scout Moor Swalesmoor	Cleanmet	Sandstone
7	Sunny Bank Farm, Southowram	Mytholm Stone Sales	Sandstone
8	Pond Quarry, Lightcliffe	Hard York Quarries	Sandstone
9	Pasture House Farm, Southowram	Marshalls Natural Stone	Sandstone
10	Grove /Cromwell, Southowram	Marshalls Natural Stone	Sandstone
11	Spring Hill Quarry, Greetland	Spring Hill Stone Sales	Sandstone,
12	Elland Edge Quarries, Elland	Rand & Asquith	Sandstone
13	Wood Top Quarry	Cleanmet	Sandstone
14	Corporal Lane	Mr & Mrs Pearce	Sandstone
15	Spaniard's Hall	Mr. J. Taylor	Sandstone
16	Marsh	Fairhurst Stone	Sandstone
17	Pinnar Lane Quarry	D. Throp	Sandstone
18	Rock End Moor Delph	Mr J Gault	Sandstone
	<b>KIRKLEES</b>		
19	Moselden Quarry, Scammonden	Marshalls Natural Stone	Sandstone, grit
20	Crosland Moor Quarries, Huddersfield	Johnson Wellfield Quarries	Sandstone, grit
21	Windy Ridge Quarry, Holmfirth	S. Peel and Son	Sandstone, grit
22	Hillhouse Edge Quarry, Holmfirth	Saxon Moor Ltd.	Sandstone, grit
23	Appleton Quarry, Shepley	Marshalls Natural Stone	Sandstone, grit
24	Sovereign Quarry, Shepley	Marshalls Natural Stone	Sandstone, grit
25	Temple Quarry, Grange Moor	Holgate Construction Lt	Sandstone, grit
26	Forge Lane Sand and Gravel Quarry	Dewsbury Sand & Gravel Lt	Sand & Gravel
	<b>LEEDS</b>		
27	Hawksworth Quarry, Guiseley	Apperley Bridge Aggre. Ltd	Sandstone, grit
28	Moor Top Quarry, Guiseley	RG Stone Sales	Sandstone, grit
29	Blackhill Quarry, Bramhope	Mone Bros Excavations Ltd	Sandstone, grit
30	Britannia Quarry, Morley	Woodkirk Stone Sales Ltd	Sandstone, fine
31	Howley Park Quarry, Morley	Marshalls Natural Stone	Sandstone, fine
	<b>WAKEFIELD</b>		
32	Darrington Quarry (part), Knottingley	FCC Environment	Limestone, mag.
33	Plasmor Quarry, Knottingley	Plasmor Ltd	Limestone, mag.

Sites permitted but not worked			
SITE			AGG.TYPE
Strands, Horbury - W	ROMP		Sand & gravel
Foxholes, Normanton - W	ROMP		Sand & gravel
Penbank, Castleford - W	ROMP		Sand & gravel
Arborary Lane Quarry - K			Sandstone

## Appendix 2 - 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 Net Additional Dwellings
- P – Planned Annual 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 through interrogation of the *live tables on housing supply: net additional dwellings - Table 122 Net additional dwellings<sup>1</sup> by local authority district, England, 2001-02 to 2019-20* published by the government, as shown in the table below:

Year	District					West Yorkshire Total
	Leeds	Bradford	Kirklees	Wakefield	Calderdale	
2006/2007	2,820	2,340	2,660	840	1,280	9,940
2007/2008	3,070	1,400	2,680	1,690	1,310	10,150
2008/2009	3,320	2,200	1,490	1,120	490	8,620
2009/2010	1,730	1,760	1,090	680	570	5,830
2010/2011	1,180	1,460	1,250	970	510	5,370
2011/2012	1,930	730	940	850	370	4,820
2012/2013	1,560	720	580	530	500	3,890
2013/2014	2,230	870	1,040	810	330	5,280
2014/2015	1,980	1,130	520	1,130	560	5,320
2015/2016	2,470	900	1,130	1,920	330	6,750
2016/2017	2,820	1,490	980	1,820	380	7,490
2017/2018	2,280	1,620	1,330	1,760	290	7,280
2018/2019	3,430	1,610	1,550	2,110	560	9,260
2019/2020	3,330	1,010	1,130	1,760	350	7,580

Note: Cells highlighted in red indicate years where current housing delivery target was missed.

- Figure P was calculated from a review of the emerging or adopted Local Plans of the 5 West Yorkshire Authorities, as shown in the table below:

### Planned Housing Delivery in West Yorkshire

	Population	Planned Annual Housing Requirement	20010-19 Average Net Additional Dwellings	Increase in Average Annual Net Additional Dwellings Required to Meet Planned Housing Delivery Target	% Uplift Required
Leeds	795,565	3,397	2,320	1,077	46%
Bradford	540,909	1,704	1,150	554	48%
Kirklees	441,772	1,730	1,050	680	65%
Wakefield	352,983	1,400	1,370	30	2%
Calderdale	210,958	840	420	420	100%
<b>W Yorks Total</b>	<b>2,342,186</b>	<b>9,071</b>	<b>6,310</b>	<b>2,761</b>	<b>44%</b>

- 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 was 0.44 or 44%, i.e. a 44% 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. 44% 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.  $0.44*0.5 = 0.22$ .
- The full formula could therefore be expressed as:

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