

Executive Summary

Sand and gravel

- The three-year average sales have increased since last year.
- Taking into account both 10-year and 3-year sales averages, the sand and gravel landbank stands above the seven years required by the National Planning Policy Framework (NPPF).
- Assessment of future demand indicates that there will be a need for additional reserves of sand and gravel to become operational before the end of the Minerals and Waste Local Plan (MWLP) period (2031). Whichever method of demand forecasting is used, the only currently active quarry must cease operations by 2026, therefore provision is made in the emerging MWLP that will seek to address this, and increase resilience, through the allocation of new sites and areas of search.

Crushed Rock

- Data on sales and reserves provided though the annual surveys cannot be published for reasons of commercial confidentiality. It has therefore been aggregated, with that of other mineral planning authorities in the West Midlands, and proportionate estimates of Herefordshire's sales have been made.
- Herefordshire relies significantly on imports of crushed rock. Should this level of reliance continue, it is anticipated that there are likely to be sufficient reserves to meet demand over the plan period. If the county were to become self-sufficient in production, then demand may outstrip the available permitted reserves.
- Of the two operational crushed rock quarries, one is required to cease operations by 2027. There may therefore be a need for additional reserves of crushed rock to be permitted up to 2031 and allocations and areas of search are being produced through the emerging MWLP.

Recycled Aggregates

- Recycled aggregates could have an increasingly important role to play in reducing the reliance on imports of aggregates in Herefordshire in the future.
- Forecasts for potential arisings of recycled aggregates over the plan period indicate that, whilst increases are likely to make a useful contribution to the supply of aggregates, the amounts will fall well short of the predicted tonnages required to meet estimated demand calculated by reference to the Core Strategy housing trajectory.

1.0 Introduction

1.1.0 Mineral resources in Herefordshire are limited in range, primarily consisting of aggregates for use in construction and a small amount of building stone. Aggregates comprise sand and gravel, crushed rock and secondary or recycled materials gained from quarry waste operations.

1.1.1 Herefordshire is not a significant producer of minerals, with only a small number of operational quarries. With few operators in the sector, much of the data on sales is restricted for reasons of commercial confidentiality.

1.1.2 National policy guidance requires Herefordshire to maintain an adequate and steady supply of aggregates during the current plan period to 2031. The West Midlands Aggregate Working Party (WMAWP) has agreed to use a ten-year rolling average as the principal indicator for aggregates production, together with an assessment of local information. This is consistent with national policy guidance.

1.1.3 The purpose of the LAA is to establish whether there is a shortage or surplus of supply and provides evidence for determining the level of provision of minerals aggregates to be made in Herefordshire's Minerals and Waste Local Plan.

1.1.4 The first section of the report considers the 2019 survey returns data on the supply (sales) of aggregates in Herefordshire. It then goes on to consider local information on development trends, to provide a forecast for demand and the future need for additional aggregate mineral resources. A summary of the results of this year's survey is illustrated in the table of headline performance indicators, in Table 1 above.

2.0 Assessment of Aggregates Supply

2.1.0 Sand and Gravel

2.1.1 Throughout Herefordshire, there are superficial sedimentary deposits of glacial tills, sand and gravels. River deposits, found in the river valleys of the Wye, Lugg and Arrow, and glacial deposits, present in the north and west of Herefordshire, are the main areas where sand and gravel is found.

2.1.2 In 2018 there were three permitted sand and gravel quarries in Herefordshire:

- Wellington Quarry
- Upper Lyde Quarry
- Shobdon Quarry

2.1.3 However, only Wellington Quarry was operational during 2018. Due to the openness of that operator, it is possible to understand a reasonable level of detail about sand and gravel reserves, supply and potential demand within Herefordshire.

2.1.4 Indications show that at Upper Lyde quarry, the required section 278 highways works and planning permission conditions have been discharged. However, no quarrying operations had commenced at the time of preparing this LAA. Shobdon remains mothballed.

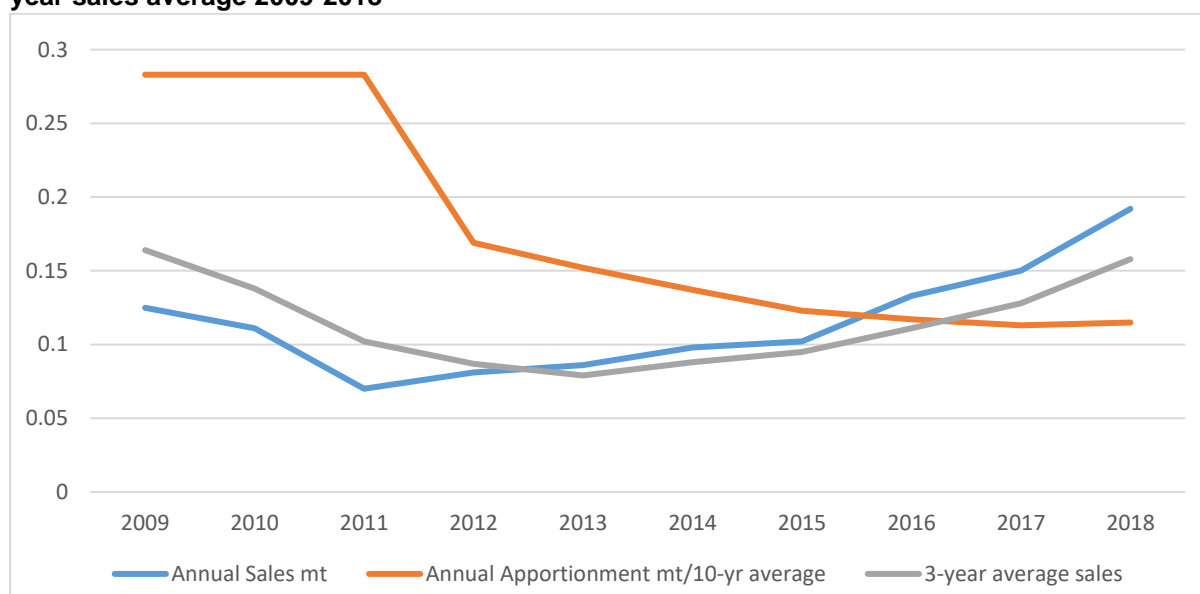
2.1.5 The latest available data indicates that, at 0.192 mt, sand and gravel production in Herefordshire in 2018 was above both the 10-year average (0.115 mt) and the 3-year (0.158 mt) rolling average for sand and gravel sales.

Table 2: Sand & Gravel in Herefordshire 2009 – 2018

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-year Average Sales
Sand & gravel sales (mt)	0.125	0.111	0.07	0.081*	0.086*	0.098	0.102	0.133	0.15	0.192	0.115

2.1.6 Figure 1 below shows the gradual upward trend of annual sand and gravel sales in Herefordshire over the past ten years. (* in Table 2 and the 2012 and 2013 datasets in Figure 1 refer to figures extrapolated from combined data with Worcestershire.) Note that from 2012, apportionment has been based on 10-year average of sales.

Figure 1: Comparison of Herefordshire’s sand and gravel sales, annual apportionment and 3-year sales average 2009-2018



2.1.7 Sales destinations: aggregates monitoring data indicates that the market area for sand and gravel produced in Herefordshire is predominantly local and it is all transported by road. Sales within Herefordshire account for just under 58% of the total. Much of the sand and gravel produced in Herefordshire, which is transported outside the county is destined for the adjoining counties of Worcestershire (21%), Shropshire (14%) and Gloucestershire (6%), see Figure 2. Only a very small proportion is exported to the region’s largest markets in the West Midlands conurbation (less than 0.1%), due to the availability of more proximate and higher quality materials closer to this area. Similar trends are expected to continue in the foreseeable future.

2.1.8 The MHCLG Annual Monitoring Surveys 2005, 2009 and 2014 provide data on sales destinations, imports and consumption of sand and gravel in Herefordshire. Table 3 reproduces this information. The initial drop in sales, import and consumption in 2009 can be explained by the economic recession, which began around 2008 and led to a significant reduction in construction and other economic activity. More recent data shows that sales of Herefordshire’s sand and gravel have been steadily increasing since economic activity has grown post-recession (see Figure 1).

Figure 2: Sand and gravel sales by destination 2018 (tonnes)

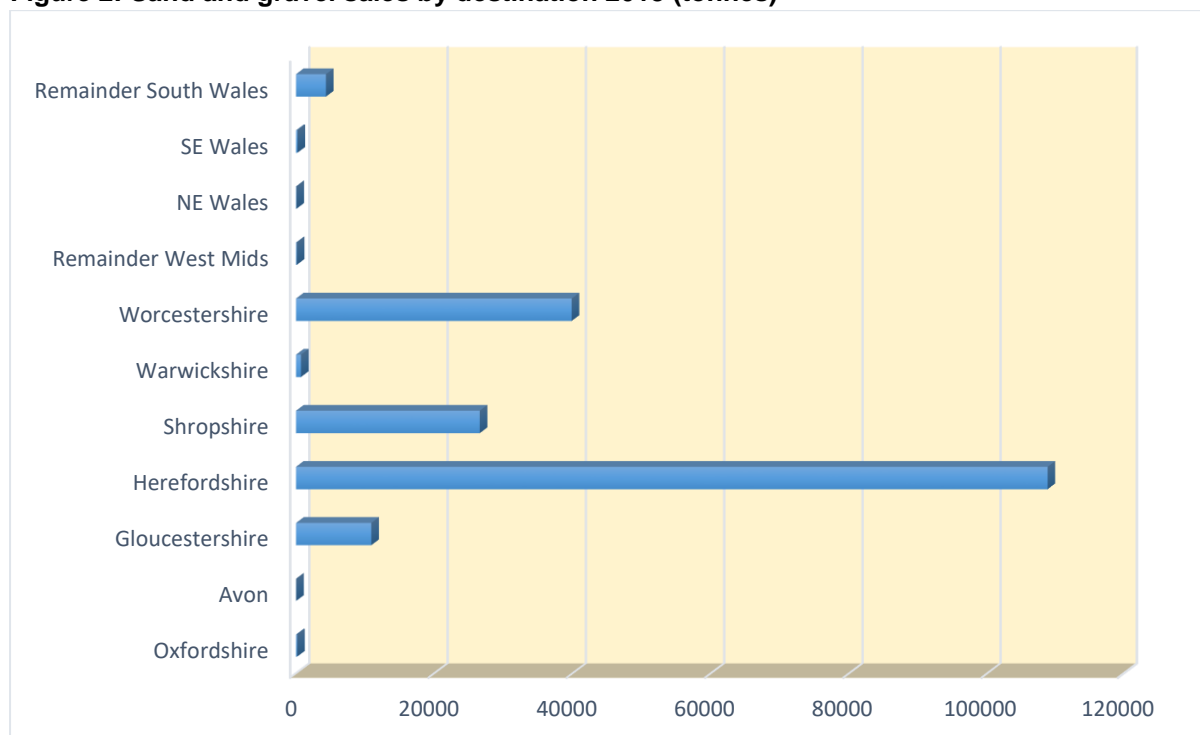


Table 3: Herefordshire sales, principal destinations, imports and consumption of sand and gravel 2005, 2009 and 2014

Year	2005	2009	2014
	Tonnes		
Sales Destination			
Herefordshire	156,000	111,000	69,000
Elsewhere in West Midlands	49,000	5,000	24,000
Elsewhere	11,000	6,000	4,000
Unknown	19,000	0	0
Imports			
Land-won sand and gravel	121,000	63,000	83,000
Marine sand and gravel	12,000	4,000	1,000
Consumption			
Land-won sand and gravel	603,000	174,000	153,000
Marine sand and gravel	12,000	4,000	1,000

2.1.9 About half of Herefordshire's consumption is met by imports of sand and gravel from outside the county. The need for mineral operators to obtain the correct specification for

market products, such as ready-mix concrete, can dictate some of this movement where such materials are not available from local deposits.

2.1.10 Landbank: the NPPF seeks a minimum landbank of seven years for sand and gravel provision. With permitted reserves in Herefordshire standing at 2.476 tonnes in 2018 and a ten-year average annual sales figure of 0.115 million tonnes, this gives a landbank of 21.5 years for sand and gravel under current conditions.

2.2.0 Crushed Rock

2.2.1 Significant outcrops of Silurian limestone can be found on the western side of the Malvern Hills and Ledbury, in the Woolhope Dome area to the east of Hereford and in the north-west of the county around Aymestrey, Leintwardine and towards the Welsh border near Presteigne.

2.2.2 There are only two producers of crushed rock in Herefordshire: Leinthall Quarry and Perton Quarry. Data for reserves and sales of crushed rock from quarries within the county therefore remains confidential. However, the five-yearly MHDCLG Annual Monitoring Surveys do provide data for imports and consumption of crushed rock for Herefordshire. See Table 4.

Table 4 Imports and consumption of crushed rock in Herefordshire

Year	2005	2009	2014
	Million tonnes		
Import of crushed rock	1.522	0.421	0.533
Consumption of crushed rock	1.691	0.435	0.7

2.2.3 The data shows the significant drop in consumption during the economic recession, which began in around 2008 and an increase in 2104, indicating some growth. Whilst, imports also increased, this was by a lesser factor, indicating that Herefordshire may have decreased its reliance on crushed rock from elsewhere.

2.2.4 Nevertheless, the data indicates that Herefordshire remains a significant net importer of crushed rock. The need for mineral operators to obtain the correct specification for market products can dictate some of this movement, where such materials are not available from local deposits. Figure 3 shows sales data graphically, indicating a period of significant decline from 2009 to 2010, which can be attributed to the economic recession. Sales then continued to decline more gradually, with a slight recovery in 2013, followed by the lowest level of sales over the past 10 years in 2015. In 2016 significant growth was seen and this level of sales continues to increase. Sales during the current monitoring period (2018) have now recovered to above the level they were ten years ago.

2.2.5 The picture for crushed rock permitted reserves and sales is unclear due to commercial sensitivities and because of a sequence of discontinuities in the time series data for sales. This is due to changes in the amalgamation of sales data across several different groupings of counties over the ten-year period.

Table 5: Crushed rock sales and permitted reserves in Herefordshire, Worcestershire, Staffordshire and Warwickshire 2007 - 2018

Year	Permitted crushed rock reserves 2007 - 2018	Total combined crushed rock sales
Million tonnes		
2007	14.6 [^]	1.76 [*]
2008	14.4 [^]	1.15 [*]
2009	15.00 [^]	1.2 [*]
2010	12.2 [^]	0.8 [*]
2011	11 [^]	0.81 [~]
2012	11.79 [^]	0.71 [~]
2013	11.54 [^]	0.815 [~]
2014	197.92 [*]	0.66 [~]
2015	200.27 [*]	0.61 [~]
2016	202.14 [*]	1.23 [~]
2017	104.21 [*]	1.27 [~]
2018	102.946 [*]	1.383 [~]
Total 10 year sales		9.488
Average 10 year sales		0.9488

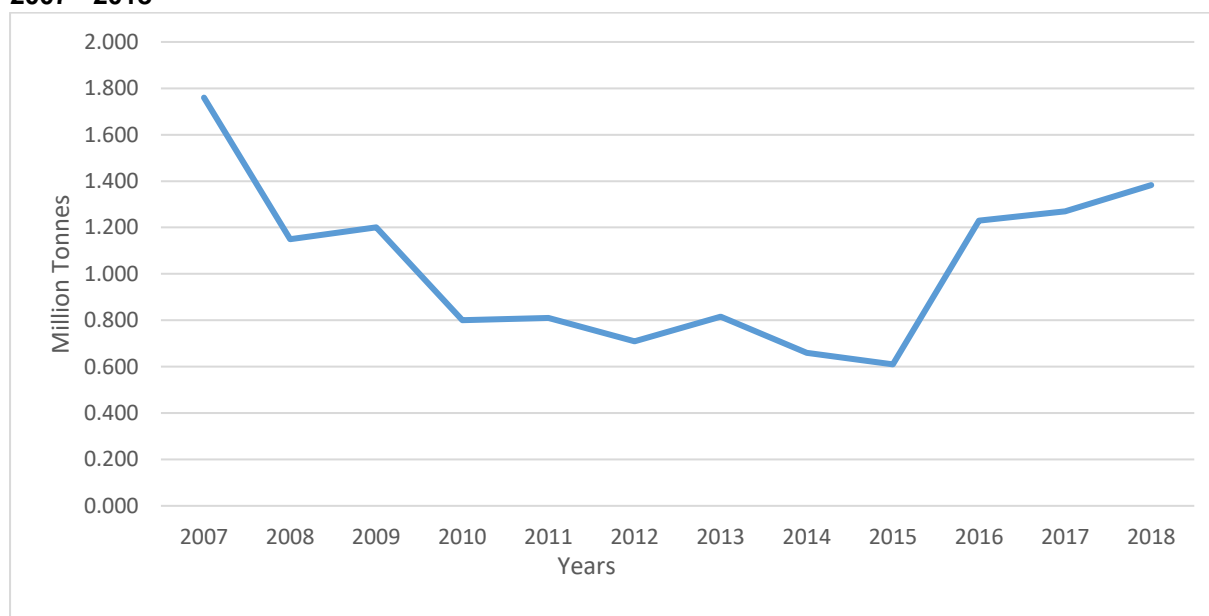
[^] Herefordshire figures

^{*} Combined figures for the authorities of Herefordshire, Worcestershire, Staffordshire and Warwickshire

[~] Combined sales figures for the authorities of Herefordshire, Staffordshire and Warwickshire

Note: Worcestershire last produced crushed rock in 2010

Figure 3: Crushed rock sales in Herefordshire, Staffordshire, Warwickshire and Worcestershire 2007 - 2018



Note: Worcestershire has not produced crushed rock since 2010

2.2.6 The NPPF seeks a minimum landbank of ten years for crushed rock provision. Permitted reserves data is presented separately from the other counties only up to 2013, with the preceding years showing some interesting fluctuations. Some disaggregation of this data is required in order to determine a landbank to use for Herefordshire crushed rock reserves.

2.2.7 One method would be to consider the proportion of crushed rock contributed by Herefordshire in 2013 (the most recent year available) to the combined authorities' total in that year.

- Herefordshire 2013: 11.54 mt
- Staffordshire, Warwickshire & Herefordshire crushed rock 2013: 188.61 mt¹
- Total reserve across all counties: 200.15 mt
- Herefordshire proportion: 5.77%

2.2.8 The combined reserve in 2018 is 102.946 mt, 5.77% of which is 5.94 mt, which indicates current crushed rock reserve in Herefordshire. Note that the grouped counties reserves figure in 2018 is higher than would be expected due to recent geological surveying at a Staffordshire quarry, which identified previously unidentified reserves.

2.2.9 In order to test this approach, and in the absence of other publically available data on which to rely, a more arbitrary calculation has also been used, which seeks to balance out some of the vagaries present in the data. This method assumes that, in 2008, there was 14 mt of permitted crushed rock reserve in Herefordshire, and that this has been worked at 1 mt per year. See Table 6.

Table 6: Identifying crushed rock reserve, Herefordshire 2018

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Million Tonnes										
WM AMR 2016	14.40	15.00	12.20	11.00	11.79	11.54	Not available for Herefordshire only				
Assumed reserve	14.00	13.00	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00

2.2.10 This approach presents some alignment with the data in the West Midlands AMR, but also indicates sales greater than those seen across the combined authorities during much of the past 10 years. It results in a permitted reserve of 4 million tonnes in Herefordshire in 2018, below the minimum sought in the NPPF. Site visits in 2018 revealed that both of the two crushed rock quarries in Herefordshire were substantially worked out and both operators indicated a need for extensions in the foreseeable future.

2.2.11 If looking solely at the combined authorities, there appears to be more than sufficient crushed rock reserve for the Minerals and Waste Local Plan period, up to 2031. However, due to the observation that both quarries in Herefordshire are substantially worked out, this is not considered to be a robust approach.

2.2.12 The proportionate approach is considered to be a more widely recognised and used approach to calculating landbanks and would appear to be realistic when compared to the arbitrary calculations presented in Table 6.

2.2.13 The calculations indicate that within Herefordshire, under current operations and market conditions, there is a potential shortfall of crushed rock over the period up to 2031.

¹ Table 4, West Midlands Aggregate Working Party, Annual Monitoring Report 2016, incorporating data from Jan-Dec 2016

large to warrant an increase in the production guideline in this LAA above the 10-year average method of calculating demand.

Sub-regional apportionment

3.2.6 Another indicator which is taken into account when looking at the production guideline is the sub-regional apportionment, derived from the *National and regional guidelines for aggregates provision in England*². These were produced to cover the period 2001-2016 and updated for the period 2005-2020 and set out the level of provision which should be made by each region. An annual “sub-regional apportionment” was derived from the 2001-2016 Guidelines, and for Herefordshire, this was 0.283mt of sand and gravel. No sub-regional apportionment based on the 2005-2020 Guidelines has been agreed.

3.2.7 It is notable that the former sub-regional apportionment figure is 34% higher than the 2018 sales figure and this level of production has not been achieved in Herefordshire in the last 10 years. See Figure 1. It is generally considered that, because the national apportionment guidelines were based on production before the recession and within a different policy context, it is not prudent to accord them significant weight³. Therefore, it would not be appropriate to increase the production guideline in this LAA above the ten-year average on the basis of the national and regional guidelines or the sub-regional apportionment.

Factors influencing demand

3.2.8 Considering local levels of planned development could provide an indication of whether demand for aggregates is likely to significantly increase or decrease, and whether such indications would warrant an adjustment in the production guideline figure. Historic completions and household projections can prove useful in the assessment of the possible implications of household changes on future demand.

3.2.9 Figure 4 shows sand and gravel sales against housing completions in the county over the last 10 years. This indicates some degree of correlation between housing completions and the level of sand and gravel sales. It shows that the level of housing completions has varied annually over the last 10 years (between 201 and 776), with an average of 500 completions per year.

3.2.10 Over the next 13 years (up to the end of the current Herefordshire Local Plan Core Strategy period in 2031), the anticipated level of housing provision is averaged at 930 dwellings per year, representing significant increase, in comparison to the average over the last 10 years. However, the Core Strategy is currently under review, following a change in Herefordshire Council’s administration after the May 2019 elections. It is anticipated that this review will reconsider many key parts of the current development strategy, including numbers and spatial distribution of new housing and whether or not to continue with the plan to build a western bypass of Hereford city.

² Department for Communities and Local Government

<https://www.gov.uk/government/publications/national-and-regional-guidelines-for-aggregates-provision-in-england-2005-to-2020>

³ The Planning Inspectorate (August 2014) *Report on the Examination into the Northamptonshire Minerals and Waste Local Plan (Northamptonshire Minerals and Waste Development Framework Partial Review)*

<http://www3.northamptonshire.gov.uk/councilservices/environment-and-planning/planning/policy/minerals-and-waste-planning-policy/documents/PDF%20Documents/ReportToNorthamptonshireCountyCouncilV3.pdf>

A new civic quarter (public offices, library, retail, leisure, visitor amenities) Modernisation and relocation of Hereford United FC Multiplex cinema	leisure and recreation facilities redevelopment of Hereford United FC New police headquarters Divisional fire brigade headquarters
Public transport interchange	Purpose built transport hub
New road link between Edgar Street and Commercial Road Extension of Canal Road to provide a new route between the station and city centre Downgrade inner ring road New road link A49 to B4399 Extending Roam Road improvement from A480 to A438 Improvements to eastern section of Roman Road New road link across northern half of Edgar Street regeneration area Leominster Enterprise Park access roads Ledbury bypass extension	Western Hereford Relief Road with second river crossing Upgrade to inner ring road Leominster southern link road New road infrastructure for Lower Bullingham New roundabout for Rotherwas Access Road Road link in Leominster linking B4361 to A44 New roundabout and road link on periphery of development at Bromyard
Park and ride schemes will be permitted	3 park and ride facilities
Land for enhancing capacity of rail network will be safeguarded	Additional capacity on rail through passing loops or double track on Hereford to Great Malvern section
Cycling and pedestrian links	Cycling and pedestrian links

3.2.19 The recent change in Council administration and the review of the Core Strategy may mean that some of this development may not take place as planned, and some has already been completed. In addition, there is a lack of data to be able to estimate the level of demand for aggregate resources that such an infrastructure development might create, particularly as it is understood that the quality of aggregates in the county is often inappropriate for construction purposes, meaning a continued proportional reliance on imports from other areas.

3.2.20 Apart from the proposed western bypass of Hereford, there are no other Nationally Significant Infrastructure Projects planned or underway within Herefordshire. However, the West Midlands Aggregate Working Party believes that the HS2 project, which will run through the West Midlands, will result in significant demand for aggregates from mineral planning authority areas in the West Midlands. As aggregates tend not to very travel far from their source, this demand is likely to be met from the mineral planning authority areas closest to the line's route in the first instance. However, the level and urgency of this demand is likely to put significant strain on existing supply options in these areas. Failing to make adequate provision to meet this increased demand could compromise the ability for both HS2 and other developments to be delivered. However, due to the distances involved and the quality of Herefordshire's aggregate, it is unlikely that significant additional extraction in Herefordshire will be needed help meet these demands, although it is difficult to quantify the extent of additional requirements at this time. Herefordshire Council, as part of the West Midlands Aggregate Working Party, is seeking to work closely with HS2 to better understand the implications for minerals supply from the West Midlands.

3.2.21 To conclude, it is considered that it may not be appropriate for the production guideline for sand and gravel in this LAA to deviate from the 10-year average based on planned or predicted future development or based on it being lower than the 3-year average. Therefore, with permitted reserves for sand and gravel standing at 2.476 mt in 2018 and the 10-year average sales in 2018 at 0.115 mt, the current landbank is 21.5 years, which would ensure sufficient supply up to 2039.

3.2.22 Resilience of supply, however, is not strong in Herefordshire. There is only one active sand and gravel quarry, containing the majority of permitted reserves. Current planning conditions require that the winning and working of minerals at this site must cease by 2026. Therefore regardless of which forecast most closely represents the real outcome for sand and gravel over the lifetime of the MWLP, there will be a need for additional reserves to become operational to meet demand from 2027 onwards.

3.3.0 *Crushed Rock Demand*

3.3.1 Current information does not enable the same level of analysis to be undertaken for crushed rock, as for sand and gravel. There is generally a lack of data in relation to crushed rock within Herefordshire, for reasons of commercial confidentiality.

3.3.2 Two methods have been considered for forecasting the potential future demand. These have produced widely varying forecasts of demand for 2017-2031. Calculations have been made for two different scenarios; on the basis of whether Herefordshire continues to rely on imports of crushed rock to meet around three quarters of its needs, and on the basis of Herefordshire being self-sufficient in crushed rock production. The forecasts are set out in Table 9 and are based on demand at 4.6 tonnes of aggregate per head and 400 tonnes per dwelling (including associated infrastructure).

Table 9: Findings from forecasts of future crushed rock demand, assuming current level of import and self-sufficiency

Scenario	Assuming imports at current level	Assuming self-sufficiency
	Demand 2018 – 2031 (tonnes)	Demand 2018 – 2031 (tonnes)
Population growth, demand at 4.6 tonnes of aggregate per head	1,795,000	7,479,000
Core Strategy housing trajectory (at 400 tonnes per dwelling)	4,572,000	19,050,000

3.3.3 Table 9 shows that, depending on the forecast used, demand for crushed rock could exceed the 11.54 million tonnes of permitted reserves data for 2013, the most recent year for which figures were available for Herefordshire separately from other counties.

3.3.4 It is acknowledged that these forecasts have been produced using a number of assumptions. However, if new data becomes available over forthcoming years, this will be used to improve the accuracy of forecasts produced.

3.3.5 Of the two operational crushed rock quarries, one is required to cease operations by 2027, and therefore could not currently contribute to meeting demand after that date. The other can continue operations until 2042. There may therefore be a need for additional reserves of crushed rock to become operational during the lifetime of the MWLP, however, it is impossible to make such predictions with any degree of accuracy.

4.0 Secondary and recycled aggregates

4.1.0 The Mineral Products Association⁴ estimates that secondary and recycled aggregates constitute 28% of total aggregate consumption in GB in 2015.

4.1.1 There are currently no industrial processes in Herefordshire which are known to produce secondary aggregates. With technical improvements, there may be potential for some provision of secondary aggregates from existing quarry operations. Although technology is moving apace in this field, at present however, none is proposed. It is also understood that some hard rock dust from quarries in Wales is used in concrete block manufacture within Herefordshire.

4.1.2 Recycled aggregates are currently being produced within Herefordshire, principally at the CD&E waste recovery facility at former Lugg Bridge Quarry.

4.1.3 The Waste Needs Assessment update 2018⁵ (paragraph 4.4.25), which is part of the evidence base underpinning the emerging MWLP, has produced two forecasts for arisings of CD&E waste in Herefordshire, based on the forecast change in GVA for the construction sector in Herefordshire and Worcestershire, produced by Experian. These two forecasts are:

- Scenario 1: Growth based on Herefordshire and Worcestershire construction sector GVA growth and a baseline figure of 357,000 tonnes in 2015 (calculated as per capita arisings using a UK per capita multiplier); and
- Scenario 2: Growth based on Herefordshire and Worcestershire construction sector GVA growth and baseline figure of 379,000 tonnes in 2015 (calculated as per capita arisings using an England waste per capita multiplier)

4.1.4 The forecasts were broken down into the key elements of the CD&E waste stream (non-hazardous construction and demolition waste, hazardous construction and demolition waste and dredging and excavation spoils) based on relative proportions estimated in 2014 and assuming that these remain constant. In this way, two forecasts for arisings of non-hazardous construction and demolition waste have been made, this being the particular element of the CD&E waste stream likely to be a source of recycled aggregates.

4.1.5 However, not necessarily all of the arisings will be recovered for recycling. The latest figures from Defra⁶ shows that 91.4% of non-hazardous construction and demolition waste was recovered in England in 2014 and 89.9% for the UK as a whole. Therefore, in considering this data for minerals purposes, the arisings forecast by the WNA update 2018 have been reduced in accordance with these rates. The adjusted forecasts are presented in Figure 6.

4.1.6 The forecasts indicate that up to 200,000 tonnes of recycled aggregates could be gained from non-hazardous construction and demolition waste in Herefordshire by 2035. In simple terms, i.e. not considering all the different recycled aggregates produced, this could be provided by proposed extensions to the operations undertaken at the former Lugg Bridge Quarry site.

Figure 6: Forecast arisings of recycled aggregates (tonnes), Herefordshire, 2018 to 2031

⁴ The Mineral Products Industry At A Glance: 2016 Edition, Mineral Products Association, 2016, http://www.mineralproducts.org/documents/Mineral_Products_industry_At_A_Galnce_2016.pdf

⁵

https://www.herefordshire.gov.uk/download/downloads/id/16736/waste_need_assessment_update_november_2018.pdf

⁶ Statistics on Waste Notice: Non-hazardous Construction and Demolition Waste UK and England 2010-2014, Defra, December 2016

