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Mineral Need Assessment 2019

Herefordshire Minerals and Waste Local Plan

March 2020

HENDECA LTD

Contents

Annexes

1. Introduction

1.1 Introduction

1.1.1 Herefordshire Council has commenced preparation of the Minerals and Waste Local Plan (the 'MWLP') to guide development related to minerals and waste within Herefordshire up to 2041.

1.1.2 The National Planning Policy Framework (published February 2019, the 'NPPF') advises *'it is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs*.' (paragraph 203). This is to be achieved, not least, by making provision for the maintenance of landbanks of: at least 7 years for sand and gravel; and at least 10 years for crushed rock. These minerals are found in Herefordshire and are being actively quarried; they are addressed within this report.

1.1.3 The NPPF also seeks a steady and adequate supply of industrial minerals, including: silica sand; cement primary (chalk and limestone) and secondary (clay and shale) materials; and brick clay. These minerals are not currently understood to be readily available or actively worked within the county; they are not considered further within this report.

1.1.4 The original Minerals Need Assessment was produced in February 2017 (the 'MNA 2017') to provide an assessment of key factors relating to the need for minerals such as the amount and type of mineral within the county and future demands. It was made available for consultation, alongside the Issues and Options Report, undertaken as part of the MWLP development process. The MNA 2017 considered base data up to year 2015.

1.1.5 An updated need assessment was published in November 2018 (the 'MNA Update 2018') which sought to respond to the comments received to the Issues and Options Report consultation and to refresh the data used.

1.1.6 This report (the/this 'MNA 2019' or 'this Assessment') reviews these data sources to consider the amount and type of mineral within the county, and future demands, afresh.

1.1.7 Despite being finalised in March 2020, this report is dated 2019 primarily to reflect more closely the time period that it is reporting and to continue the sequencing with the previous reports.

Updates

1.1.8 Since publication of the MNA Update 2018 key data sources have been updated, with the most recent data (for years 2017 and 2018) being:

- Section 5 of the Herefordshire Authority Monitoring Report 2019 presents the Herefordshire Local Aggregates Assessment 2019 (the 'LAA 2019'). This incorporates survey data relevant for the period January to December 2018 and is a key data source for this report.
- The West Midlands Aggregate Working Party, Annual Monitoring Report 2017 (the 'West Midlands AMR 2017') has also been published since the MNA Update 2018, incorporating data from January to December 2017.

1.1.9 In addition, the MNA 2019 has incorporated revisions of:

- a briefing paper on regional and country economic indicators produced by the House of Commons Library;
- an economic and fiscal outlook at the national level published by the Office for Budget Responsibility (OBR); and
- a forecast of construction output nationally from the Construction Products Association.

1.1.10 Table 2.1 of this Assessment has been refreshed to reflect a slight change in status at one of the sites.

1.1.11 The MNA 2017 provided forecasts of need to 2031. As well as updating the 2031 forecasts, the MNA Update 2018 extended some of the forecasts to 2035.

1.1.12 This Assessment updates the principal data tables and figures, where new data is available, and extends the forecasts to 2041.

1.1.13 This MNA 2019 is a complete analysis, using the most up to date information. It has been prepared to be a discrete report, so the reader does not need to refer back to previous MNA; where there are interesting observations to be made, cross referencing is provided as appropriate.

Structure

1.1.14 This report is structured as follows:

- Section 1 – Introduction and Data Sources;
- Section 2 – Minerals within Herefordshire: refreshed information about existing and former quarries in the county;
- Section 3 – Aggregates, Baseline: an understanding of the current permitted reserves of sand and gravel and crushed rock;
- Section 4 – Aggregates, Future Demand: an assessment of the potential future demand for aggregates, including recycled aggregates;
- Section 5 - Other Minerals: building stone; and hydrocarbons; and
- Section 6 – Conclusions: presenting the key conclusions made from the information available.

1.2 Data Sources

Annual Minerals Survey

1.2.1 Herefordshire Council undertakes an Annual Minerals Survey of operators in the county to obtain data on: permitted reserves of aggregates at the end of the calendar year; sales of minerals during the year; and the destination point of those sales. This data is collated so that figures for individual operators cannot be identified.

1.2.2 The most recent year for which this data exists is 2018.

1.2.3 This report is hereafter referred to as the 'Herefordshire AMS 2018'.

Local Aggregates Assessment

1.2.4 The results of the Annual Minerals Survey are used to compile the Local Aggregate Assessment ('LAA'). Mineral planning authorities ('MPA') are required to prepare a LAA and to update it annually. The LAA is required to:

- forecast the demand for aggregates based on average 10-years sales data and other relevant supply information; and
- analyse supply options through the consideration of current planning permissions and minerals safeguarding areas.

1.2.5 The LAA 2019, the most recently published LAA data for Herefordshire[1] reports on minerals data for 2018.

West Midlands Aggregate Working Party Annual Monitoring Report

1.2.6 The West Midlands Aggregate Working Party ('WM AWP') is a technical group concerned with data collection, collation and monitoring. It also provides advice on future trends in and affecting the area, together with the environmental and other implications of meeting Government aggregate demand forecasts.

1.2.7 The WM AWP draws its members from the MPA in the region[2] together with representatives from the minerals industry through its trade associations (the Mineral Products Association and the British Aggregates Association) plus the Ministry of Housing, Communities and Local Government, the National Federation of Demolition Contractors, and the Environment Agency.

1.2.8 Data from the Annual Minerals Survey undertaken by each relevant MPA is collated by the WM AWP, which produces a regional Annual Monitoring Report.

1.2.9 The most recent is the WM AMR 2017[3]. This provides sales and reserves data for the 2017 calendar year as well as data for earlier years.

Aggregate Minerals Survey

1.2.10 The Department for Communities and Local Government[4] (DCLG) published the Aggregate Minerals Survey[5] every four years, a collation of data from the Annual Minerals Surveys undertaken by each MPA in England and Wales. The most recent available version is for year 2014[6].

1.2.11 The report presents sales of aggregates produced in Herefordshire and the destination for those sales, either within Herefordshire, in the West Midlands or elsewhere. The report also

[1] Herefordshire Local Aggregates Assessment 2019, Herefordshire Council, February 2020

[2] Herefordshire, Worcestershire, Shropshire, Staffordshire, Warwickshire and the West Midlands Conurbations.

[3] West Midlands Aggregate Working Party, Annual Monitoring Report 2017, incorporating data from January – December 2017, Urban Vision Partnership Ltd, December 2018

[4] It is recognised that this Department is now the Ministry for Housing, Communities and Local Government, but the Ministry has not published minerals data to date. Consequently, reference to the Department for Communities and Local Government, or DCLG, is retained within this report.

[5] http://webarchive.nationalarchives.gov.uk/20121030202828/http://www.communities.gov.uk/planningandbuilding/planningbuilding/planningresearch/researchreports/mineralswasteresearch/aggregatemineralssurveys

[6] https://www.gov.uk/government/publications/aggregate-minerals-survey-for-england-and-wales-2014

shows movement of materials, setting out information on the inter-regional flow of aggregates.

1.2.12 The three most recent Aggregate Minerals Surveys are used within this report, i.e. those published for 2005, 2009 and 2014. It is recognised that some of this data is now somewhat old, but it is considered to provide useful and relevant contextual information for policy preparation.

1.2.13 These reports are hereafter referred to as the 'DCLG AMS 2005', 'DCLG AMS 2009', and 'DCLG AMS 2014'.

1.2.14 It is also important to note that the 2014 data has not been verified by the British Geological Survey ('BGS'), and discussion with adjacent MPA has questioned its accuracy. However, it remains the best available data in relation to both minerals movements across administrative boundaries and consumption within an authority.

Annual Raised Enquiry

1.2.15 The Office for National Statistics ('ONS') carries out an Annual Raised Enquiry of the sales of all minerals except coal, for the MHCLG[7] and the Department for Business, Energy and Industrial Strategy. The data is presented in an annual report, Mineral Extraction in Great Britain, the latest available version of which is for 2014[8].

1.2.16 Data is available at county level. However, for Herefordshire figures are only available for building stone. The figures for sand and gravel and for crushed rock within Herefordshire are confidential.

Construction, Demolition and Excavation Waste Survey

1.2.17 In February 2007, DCLG published the Survey of Arisings and Use of Alternatives to Primary Aggregates in England[9]. This report was generated by information gained from operators of crushers and screens and of licensed landfill sites for the year 2005. Its purpose was to generate estimates for the amount of recycled aggregates and soil used and disposed of at licensed landfill facilities and for construction, demolition and excavation waste ('CD&E waste') spread on registered exempt sites.

1.2.18 This was the third in a series of surveys undertaken every two years and provides figures for Herefordshire and Worcestershire combined. However, it is quite an old data source and is used for background context only.

Waste Need Assessment 2017, Update 2018 and Waste Need Assessment 2019

1.2.19 Alongside this assessment of need for minerals, Herefordshire has commissioned preparation of a waste need assessment. This study uses the current method for estimating the amount of CD&E waste available for use as a recycled aggregate and provides data relevant to Herefordshire only.

1.2.20 An update of the Waste Need Assessment dated February 2017 was undertaken and produced in November 2018 to take account of new sources of data on waste and responses

[7] Ministry of Housing, Communities and Local Government

[8] Mineral Extraction in Great Britain 2014, DCLG, March 2016. https://www.gov.uk/government/statistics/mineral-extraction-in-great-britain-2014 [27.02.2020@10:52]

[9] Survey of Arisings and Use of Alternatives to Primary Aggregates in England 2005: Final Report, DCLG, February 2007

made to the Issues and Options Report. The WNA was run afresh in December 2019 to incorporate the latest available data. This report is hereafter referred to as the 'WNA 2019'.

2. Minerals within Herefordshire

2.1 Overview

2.1.1 Herefordshire's bedrock geology is almost entirely sedimentary in origin. It is dominated by the Old Red Sandstone but fringed by older rocks and covered in a mantle of ice age deposits.

2.1.2 The predominant underlying geology of Herefordshire consists of Devonian Old Red Sandstone, comprising mudstones and sandstone. However, there are some older outcrops occurring in the north-west of the county (around Brampton Bryan) consisting of mudstones, sandstones and volcanic rocks. Silurian mudstones and siltstones also occur in this area. Significant outcrops of limestone also occur in the north-west of the county, in the areas around Aymestrey, Leintwardine and towards the Welsh border near Presteigne.

2.1.3 Silurian limestone and mudstones also outcrop in the Woolhope area, surrounded by the younger Old Red Sandstone rocks. Similar aged hard rocks also occur on the western flanks of the Malvern Hills, on the border with Worcestershire.

2.1.4 Throughout Herefordshire, there are superficial sedimentary deposits of glacial tills, sand and gravels.

2.2 Quarrying in Herefordshire

2.2.1 Known mineral resources in Herefordshire are relatively limited in range, primarily consisting of aggregates for use in construction but also a small amount of building stone. Aggregates comprise: sand and gravel; crushed rock; and secondary or recycled materials gained from quarry and waste operations.

2.2.2 The BGS was commissioned to provide further detail on the mineral resource within Herefordshire and its viability for use. This information has been used in preparing minerals policy of the MWLP.

2.2.3 Using the currently available information, the commercially exploitable minerals available for extraction from within Herefordshire include sand, gravel, crushed rock and sandstone.

- Sand and gravel:
  - River terrace deposits are mainly found in the river valleys of the Wye, Lugg and Arrow; and
  - Glacial deposits are present in the north and west of Herefordshire.
- Crushed rock:
  - Silurian limestone is found on the western side of the Malvern Hills and Ledbury, the Woolhope dome and in the north-west of the county in the Presteigne/Aymestrey areas;
  - Carboniferous limestone is present to the south-west of Ross-on-Wye in the northern flanks of the Forest of Dean; and
  - Igneous and metamorphic rock occurs in the Malvern Hills.

- Sandstone occurs extensively throughout much of Herefordshire and several operational quarries exist in the north, west and south of the county. The output is of particular importance for heritage restoration and in creating authentic character for new-build properties.

2.2.4 Secondary and recycled materials have an important role to play in the overall supply of aggregates. Secondary aggregates are minerals that are produced as a by-product of other mining or quarrying activities or as a by-product of an industrial process. Recycled aggregates arise from several sources, notably from the demolition of buildings or from civil engineering works such as asphalt planings from road resurfacing and railway track ballast. Recycling aggregates usually involves the removal of unwanted or inappropriate material such as fines, wood, plastic and metal, and some form of treatment (crushing, washing and/or screening) to reach industry standards for its re-use.

2.2.5 Coal was formerly worked in two locations:

- the southern tip of the Wyre Forest Coalfield, which extended into the north of the county near the boundary with Worcestershire and Shropshire; and
- a small outlier site of the Forest of Dean Coalfield that extends into southern Herefordshire.

2.2.6 In 1999, the BGS[10] reported that the hydrocarbon prospectivity of the county was low. Wells drilled to test the oil and gas potential of sandstones in the Worcestershire Basin and rocks in the Woolhope Inlier had failed to discover hydrocarbons.

2.2.7 Coalbed methane is believed to lie in the south of the county, within a reserve that extends into Gloucestershire. At the time of writing there was no publicly stated intention to work the reserve.

2.2.8 Table 2.1 presents the currently known information about quarries in Herefordshire, these are presented graphically in Figure 2.1.

2.2.9 Moreton on Lugg Quarry (see Table 2.1, MNA 2017) was renamed Upper Lyde Quarry in Table 2.1 of the MNA Update 2018 and has retained that name in this Assessment. Planning conditions for the quarry have now been discharged, and the operator advised Herefordshire Council that sand and gravel extraction commenced on 20 September 2019[11]. Because it is reporting on data from year 2018, the LAA 2019 reports that the site is not yet operational.

2.2.10 The data in Table 2 has been collated for information and should not be relied upon for commercial purposes.

[10] Mineral Resource Information for Development Plans: Phase One Herefordshire and Worcestershire: Resources and Constraints, BGS and the Department of the Environment Transport and the Regions, 1999

[11] Email from Wye Valley Group dated 30 September 2019

Table 2.1 Identified mineral sites, Herefordshire, 2019

	Quarry name	Status	Planning history	Operational requirements
	Sand and gravel			
1	Stretton Sugwas Quarry (Hereford Quarry)	Closed	Approval in June 2004 for extraction of sand and gravel.	
2	Lugg Bridge Quarry	Closed	Approval in 2005 for restoration of redundant sand and gravel quarry. Permission in October 2013 for change of use from sand and gravel and ancillary ready mixed concrete plant to stand alone ready mixed concrete plant.	
3	Upper Lyde Quarry	Operational	Approval in August 2001 for imposition of new conditions and deletion of original conditions attached to an existing planning permission for gravel extraction granted on 1 December 1965.	Written notice of commencement of sand and gravel working at 20 September 2019. All mineral extraction to cease and site to be restored to agricultural land and nature conservation within 10 years of the date of commencement.
4	Shobdon Quarry	Inactive	Review of Old Mineral Permission (ROMP) approved July 2005.	
5	Wellington Quarry	Active	Permission in February 2013 to extend operational area for sand and gravel extraction.	Winning and working to cease by 31 December 2026.
6	St Donat's Quarry	Restored	Approval in January 1997 for extraction of sand and gravel. Permission granted in September 2004 to vary condition 1, required works to commence within 5 years. Consent not implemented and now lapsed.	

	Quarry name	Status	Planning history	Operational requirements
	Limestone			
7	Leinthall Quarry	Active	Permission in November 2009 for continuation of operations.	Reclamation by August 2027.
8	Loxter Ashbed Quarry	Restored	Permission in January 2000 for restoration of part of quarry to woodland. Permission in July 2001 for temporary haul road for quarry.	
9	Nash Scar Quarry	Mothballed	Permission in January 2011 to extend deadline for scheme submission to August 2026.	
10	Perton Quarry	Active	Permission in May 2000 for continued extraction and processing of limestone. Refusal in January 2002 for extension of hours for lorry movements.	All extraction and restoration to cease by February 2042.
	Sandstone			
11	Brakes Farm Delve	Abandoned	Permission given in October 2008 for the winning, working and preparation of Downton Castle stone.	Maximum of 4 vehicle movements in 24 hrs Development, including restoration, will cease no more than 15 years from commencement date. Commencement must begin within 3 years of the permission date.
12	Callow Delve	Active	Permission given in August 2013 for extension of existing approved mineral extraction to excavate area of 0.075 hectares. Officer report describes sand and gravel quarry as ceased.	The maximum volume of aggregate to be exported from the site shall not exceed 15% of the total export of building stone from the site, averaged over a 3-year

	Quarry name	Status	Planning history	Operational requirements
				period. Sufficient building stone for hand working shall be made available during the life of the quarry to supply the reasonable demand for such stone in the local area.
13	Black Hill Delve (formerly Coed Major Delve)	Active	Planning approval given in October 1999 for extension to small sandstone quarry.	
14	High House Delve	Unsuccessful, never exploited	Approval in August 2002 for extraction of sandstone using low tech tools and limited use of farm size machinery.	
15	Hunters Post Delve	Closed, naturally regenerated	Listed by the BGS and Historic England's Heritage's Strategic Stone Study[12] as active in 2014.	
16	Llandraw Delve	Active	Permission in January 2014 for reopening of disused delve.	Maximum of 3 vehicle outbound movements per day and maximum of 12 per week. Cessation of workings by 7 years from permission (January 2014).
17	Pennsylvani Delves	Active	Approval in July 2000 for surface quarrying of flagstones, roofing tiles and building stone.	
18	Sunnybank Delve	Active	Permission in August 2002 for extraction of building stone using chisels, hammer and limited use of farm size machinery.	

[12] http://www.bgs.ac.uk/mineralsuk/buildingStones/StrategicStoneStudy/EH_atlases.html

	Quarry name	Status	Planning history	Operational requirements
19	Tybubach Delve	Abandoned, to be restored	Permission in December 2010 for time extension.	Maximum of 3 vehicle movements in a day and maximum of 12 per week. All development, including restoration, is to take place within 15 years of commencement of activity. Activity is to commence within 5 years of the permission.
20	Westonhill Wood Delves	Active	Permission in March 2014 to extend life of existing quarry and alter site areas for good access to quality stone.	Maximum of 6 outbound vehicles per day and maximum of 25 per week. Development, including restoration, to cease not later than 25 years from date of permission (March 2014).
	Coal			
21	Howle Hill Quarry	Restored	Permission refused in October 2004 for infill with inert material and restoration to agricultural use.	

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Figure 2.1
Identified mineral sites, Herefordshire, 2018

ID	Name	Mineral	Status	Postcode	Easting	Northing
1	Stretton Sugwas Quarry (Hereford Quarry)	Sand and gravel	Closed	HR4 7QD	345219	242316
2	Lugg Bridge Quarry	Sand and gravel	Closed	HR1 3LZ	353707	242449
3	Upper Lyde Quarry	Sand and gravel	Active	HR4 8AF	349825	245797
4	Shobdon Quarry	Sand and gravel	Inactive	HR6 9LA	339108	260210
5	Wellington Quarry	Sand and gravel	Active	HR4 8BY	350903	248046
6	St Donat's Quarry	Sand and gravel	Restored	HR4 8NQ	348633	245735
7	Leinthall Quarry	Limestone	Active	HR6 9TR	344269	267761
8	Loxter Ashbed Quarry	Limestone	Restored	HR8 1NU	371316	240720
9	Nash Scar Quarry	Limestone	Mothballed	LD8 2LE	330603	262517
10	Perton Quarry	Limestone	Active	HR1 4ED	358649	239931
11	Brakes Farm Delve	Sandstone	Abandoned	SY8 2LF	344262	275100
12	Callow Delve	Sandstone	Active	NP25 5RL	350923	217065
13	Black Hill Delve (formerly Coed Major Delve)	Sandstone	Active	HR2 0PX	327157	237279
14	High House Delve	Sandstone	Closed	HR2 0ND	330882	230872
15	Hunters Post Delve	Sandstone	Closed	NP25 5RW	349257	217402
16	Llandraw Delve	Sandstone	Active	HR2 0PW	330056	234227
17	Pennsylvani Delves	Sandstone	Active	HR2 0PU	328399	238849
18	Sunnybank Delve	Sandstone	Active	HR2 0LA	329480	238127
19	Tybubach Delve	Sandstone	Closed	HR2 0PJ	330454	232312
20	Westonhill Wood Delves	Sandstone	Active	HR3 6DE	331442	245082
21	Howle Hill Quarry	Coal	Restored	HR9 5SH	360341	220426

Legend

Minerals Facilities

Type

- Coal
- Limestone
- Sand and gravel
- Sandstone

Status

- Active
- Restored
- Uncertain
- Inactive/Closed
- Herefordshire County Boundary

N

0 5 10 15

Kilometres

SCALE 1:250,000 @ A3

DATE 12/03/2020

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3. Aggregates, Baseline

3.1 Introduction

3.1.1 This section of the MNA 2019 deals with aggregates, consisting of sand and gravel, crushed rock, marine aggregates and secondary and recycled aggregates. It aims to identify the current level of supply of aggregates, assessed in terms of sales, and compare this with the existing and likely future demand for aggregates over the lifetime of the MWLP.

3.2 Supply of sand and gravel

3.2.1 There are three sand and gravel quarries permitted within Herefordshire:

- Upper Lyde Quarry;
- Shobdon Quarry; and
- Wellington Quarry.

3.2.2 However, only Wellington Quarry is operational at the time of writing and able to supply data (there is no data for Upper Lyde Quarry).

LAA 2019

3.2.3 Due to the openness of the operator at Wellington Quarry, having agreed that this single source of data can be made public, it is possible to understand a reasonable level of detail about sand and gravel reserves, supply and potential demand within Herefordshire.

3.2.4 The LAA 2019 reports that there were 2,476,000 tonnes of permitted reserves of sand and gravel in the county at 31 December 2018 and 192,000 tonnes sold during that year.

3.2.5 A ten year historic average annual sales figure of 125,000 tonnes, gives a landbank of 19.8 years.

3.2.6 This is discussed further from paragraph 3.2.19.

West Midlands Aggregate Working Party Annual Monitoring Report 2017

3.2.7 The West Midlands AMR 2017 provides information on sand and gravel permitted reserves and sales from 2008 to 2017; this is represented in Table 3.1.

Table 3.1 Sand and gravel sales and permitted reserves, Herefordshire and Worcestershire, 2008 to 2017

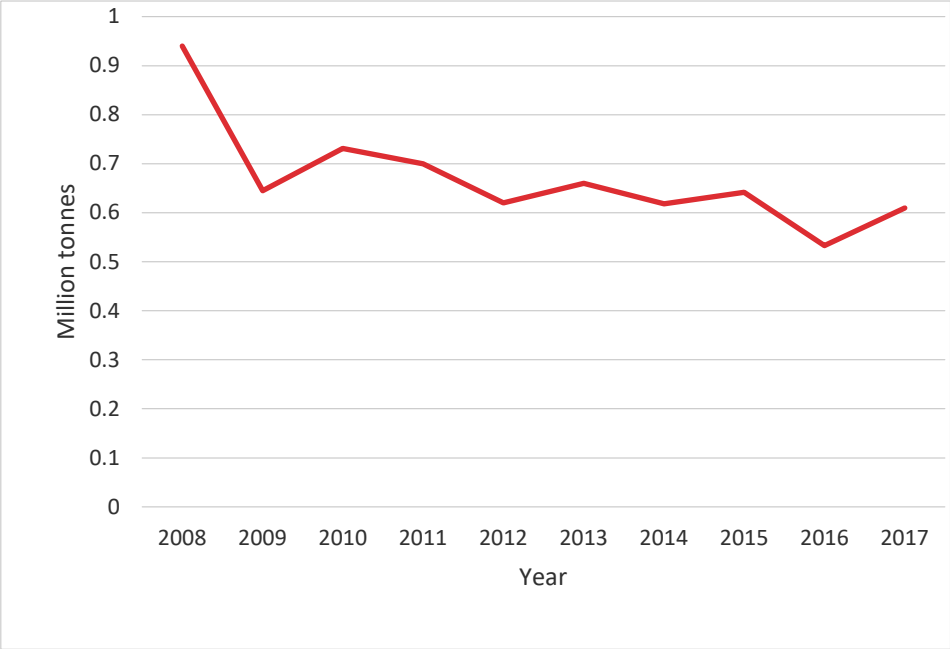
Year	Permitted reserves[13]		Sales[14]	
	Herefordshire	Worcestershire	Herefordshire	Worcestershire
	Million tonnes			
2008	6.148	3.021	0.18	0.76
2009	5.15	3.65	0.13	0.52
2010	2.92	4.49	0.11	0.62
2011	2.87	3.85	0.07	0.63
2012	6.57		0.62	
2013	6.01		0.66	
2014	2.76	2.50	0.10	0.52
2015	2.66	0.54	0.10	0.54
2016	2.75	4.29	0.13	0.40
2017	2.60	3.47	0.15	0.46
Total 10 year sales			1.21	5.73
Average 10 year sales			0.13	0.60

3.2.8 Figure 3.1 graphically presents the combined sand and gravel sales data for Herefordshire and Worcestershire. Using the data as combined provides useful context to historical sand and gravel sales across the two authorities.

[13] Table 2, West Midlands Aggregate Working Party, Annual Monitoring Report 2017, incorporating data from January – December 2017

[14] Table 1, West Midlands Aggregate Working Party, Annual Monitoring Report 2017, incorporating data from January – December 2017

Figure 3.1 Sand and gravel sales and permitted reserves, Herefordshire and Worcestershire, 2008 to 2017



3.2.9 The data shows that sales fell significantly in 2008-09, had a brief recovery in 2010, but have since continued to decline over time, with a slight recovery in 2017. Looking back to 2005, indicates that minerals sales have historically shown some volatility. However, it is likely that the global recession and its consequent financial uncertainties, which have been compounded by the UK's exit from the European Union, has affected sales.

3.2.10 Table 3 of the West Midlands AMR 2017 identifies a 21.67 years landbank for sand and gravel in Herefordshire. Recognising the lack of detail available for minerals data, the difference between this landbank and that identified in the LAA 2019 (just two years, see paragraph 3.2.5) is not considered to be significant. The LAA 2019 uses more up to date information and consequently is relied upon within this Assessment.

Aggregate Minerals Survey

3.2.11 The supply and destination of sand and gravel from Herefordshire is documented in the DCLG AMS 2005, 2009 and 2014. Sales of aggregates from Herefordshire in each year and their principal destinations are set out in Table 3.2.

Table 3.2 Sales and principal destination of land-won sand and gravel from Herefordshire, 2005, 2009 and 2014

Destination	2005	2009	2014
	Tonnes		
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

3.2.12 The DCLG AMS 2005, 2009 and 2014 also provide data on the level of import of sand and gravel into the county and consumption within Herefordshire, reproduced in Table 3.3.

Table 3.3 Import and consumption of sand and gravel in Herefordshire, 2005, 2009 and 2014

Year	2005	2009	2014
	Tonnes		
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

3.2.13 Tables 3.2 and 3.3 show a significant drop in sales, import and consumption in 2009 compared to 2005. A significant drop in sales is seen again at 2014, with a limited drop in consumption, but import of land-won mineral has slightly increased.

3.2.14 The initial drop in these factors can be explained by the economic recession which began around 2008 and led to a significant reduction in construction and other economic activity. A change of 20,000 tonnes between the 2009 and 2014 data may be due to data inaccuracies and is not considered material; the level of import and consumption can reasonably be considered to be fairly constant. However, the successive drop in sales is more relevant to plan making and may indicate the need for greater robustness in sand and gravel supply.

3.2.15 The figures also show that about half of Herefordshire's consumption is met by imports of sand and gravel from outside of 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.

3.2.16 Herefordshire has no marine reserves, but a small amount is imported into the county, constituting about 1% of total sand and gravel consumption in 2014. Marine aggregates can have special qualities which meet particular specifications.

3.2.17 Annex A presents the BGS prepared consumption of total sand and gravel (land-won and marine-dredged) for aggregate in 2014 identifying for each sub-region the principal

supplying MPA. This data has not been verified by the BGS but is the only such available data set.

3.2.18 It indicates that Herefordshire was 40% to 50% self-sufficient in sand and gravel provision in 2014, which is also reflected in Tables 3.2 and 3.3 above. Sand and gravel is primarily (over 10%) imported from Staffordshire (30% to 40%) and Worcestershire (10% to 20%). The primary export destination is Worcestershire (10% to 20%).

Historic ten year average sales

3.2.19 The LAA 2019 provides historic annual data on sales of sand and gravel in Herefordshire for most of a ten year period. For two of those years (2012 and 2013) the sales data is only available combined with sales in Worcestershire, thus providing significantly higher figures for those years. For these two years, the LAA 2019 assumes that Herefordshire sales of sand and gravel were 13% of the sales in the two counties combined, to enable a ten year average to be calculated.

3.2.20 Table 3.4 gives the current ten years' worth of sales and annual average sales for that ten year period for Herefordshire.

Table 3.4 Ten year sales of sand and gravel in Herefordshire, 2009 to 2018

Year	Sales (million tonnes)
For information	
2007	0.19
2008	0.177
Ten year average data	
2009	0.125
2010	0.111
2011	0.07
2012	0.081
2013	0.086
2014	0.098
2015	0.102
2016	0.133
2017	0.15
2018	0.192
Ten year average	**0.115**

3.2.21 The NPPF seeks a minimum landbank of seven years for sand and gravel provision. With permitted reserves in Herefordshire standing at 2,476,000 tonnes in 2018, a ten year average annual sales figure of 115,000 tonnes gives a landbank of 21.5 years for sand and gravel under current conditions.

3.3 Supply of crushed rock

3.3.1 The picture for crushed rock permitted reserve 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.

LAA 2019

3.3.2 There are only two producers of crushed rock in Herefordshire. Data for reserves and sales of crushed rock from quarries within Herefordshire therefore remains confidential.

3.3.3 Consequently, the LAA 2019 provides data on sales and permitted reserves in 2018 for Herefordshire, Staffordshire, Warwickshire and Worcestershire combined. This is shown in Table 3.5.

West Midlands Aggregate Working Party Annual Monitoring Report

3.3.4 The LAA 2019 provides information on crushed rock permitted reserves and sales from 2009 to 2018 (at Table 5), this is represented in Table 3.5 below. The source of the LAA data is the WM AMR 2017 and latest officer information.

Table 3.5 Crushed rock sales and permitted reserves in Herefordshire, Staffordshire, Warwickshire and Worcestershire, 2009 to 2018

Year	Permitted reserves in Herefordshire[15]	Total sales combined[16]
	Million tonnes	
2009	15.00	1.2*
2010	12.20	0.8*
2011	11.00	0.81*
2012	11.79	0.71*
2013	11.54	0.82*
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*

* Figures are for Herefordshire, Staffordshire, Warwickshire and Worcestershire combined

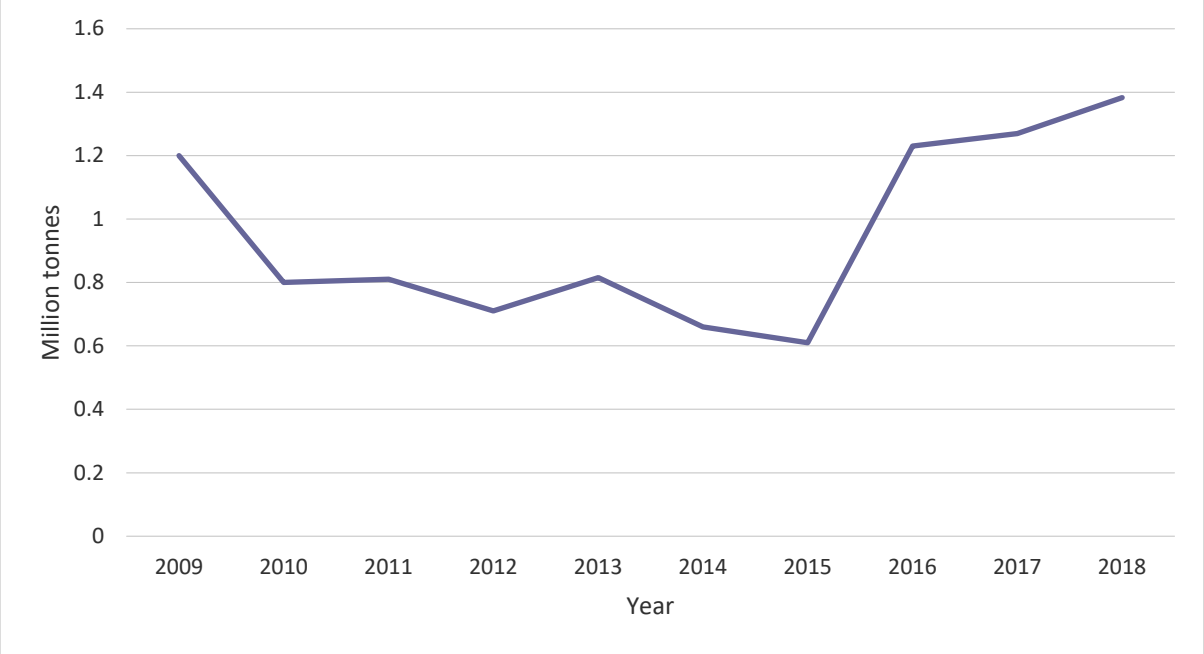
[15] Table 2, West Midlands Aggregate Working Party, Annual Monitoring Report 2017, incorporating data from January – December 2017

[16] Table 1, West Midlands Aggregate Working Party, Annual Monitoring Report 2017, incorporating data from January – December 2017

3.3.5 Figure 3.2 shows the above sales data graphically, indicating a period of significant decline from 2009 to 2010, which can be attributed to the economic recession. Sales 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, followed by increases in 2017 and 2018.

3.3.6 Whilst Figure 3.2 indicates great volatility over the past ten years, over a 5 year period (between 2010 and 2015) the data indicates that sales of crushed rock remained within a variable of about 200,000 tonnes; this would indicate that sales were reasonably consistent and the market had plateaued somewhat. Recent data indicates a sustained recovery from that period back to pre-recession levels.

Figure 3.2 Crushed rock sales in Herefordshire, Staffordshire, Warwickshire and Worcestershire, 2009 to 2018



3.3.7 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.

3.3.8 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 crushed rock, 2013: 11.54 million tonnes
- Staffordshire, Warwickshire and Worcestershire crushed rock, 2013 = 188.61 million tonnes[17]

[17] Table 4, West Midlands Aggregate Working Party, Annual Monitoring Report 2016, incorporating data from January – December 2016

- Total reserve across all counties = 200.15 million tonnes
- Herefordshire proportion = 5.77%

3.3.9 The combined reserve in 2018 is 102.946 million tonnes, 5.77% of which is 5.94 million tonnes, which indicates current crushed rock reserve in Herefordshire.

3.3.10 In order to test this approach, and in the absence of other publicly available data to rely upon, a more arbitrary approach has also been used, which seeks also to balance out some of the vagaries present in the data. This approach simply assumes that, in 2008, there was 14 million tonnes of permitted crushed rock reserve in Herefordshire, and that this has been worked at a consistent rate of one million tonnes per year. One million tonnes of sales per year was chosen as an arbitrary figure, although it is reflective of the 10year average sales of crushed rock across the combined authorities. This is presented in Table 3.6.

Table 3.6 Arbitrary approach to identifying crushed rock reserve, Herefordshire, 2018

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Million tonnes										
WM AMR 2017	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

3.3.11 This approach presents some alignment with the data of the West Midlands AMR 2017 and LAA 2019, particularly in the early years, dropping rapidly to leave a permitted reserve of just 4 million tonnes of crushed rock in Herefordshire at 2018.

3.3.12 If sales were really happening at this rate, which takes no account of any external effects (e.g. the 2008 recession) and incorporates sales reflective of those seen across the combined authorities, it would mean that Herefordshire would have only four years of reserve remaining, below the minimum sought in the NPPF.

3.3.13 Staffordshire, Warwickshire and Worcestershire County Councils have all used data on crushed rock for combined groupings of counties in their respective Local Aggregate Assessments. In Staffordshire[18] and Warwickshire[19], figures are presented for Staffordshire, Herefordshire, Warwickshire, and Worcestershire combined; while in Warwickshire, figures are presented for the landbank for Warwickshire based on the former sub-regional apportionment. Staffordshire concludes that, as part of a grouping of combined authorities, there is more than sufficient crushed rock reserve for the plan period. The Worcestershire Analysis of Mineral Resources[20] states that there are no permitted reserves in Worcestershire.

3.3.14 Reference to the proportioned approach indicated a landbank of 5.94 million tonnes whilst the arbitrary approach would indicate a landbank of 4 million tonnes.

3.3.15 This MNA 2019 relies upon the proportioned approach, identifying 5.94 million tonnes of crushed rock reserve within Herefordshire at 2018. This is a more widely recognised and used

[18] Draft Local Aggregate Assessment – 2018 Survey,, Staffordshire County Council, 2019
[19] Warwickshire Draft Local Aggregate Assessment 2017, Warwickshire County Council, October 2017
[20] Analysis of Mineral Resources in Worcestershire, Worcestershire County Council, April 2019

approach and would appear to be realistic when compared against the arbitrary calculations presented in Table 3.6.

3.3.16 Even if sales of 1 million tonnes per year were occurring (which does not appear to be the case looking at the data from the WM AMR 2017) this would mean that the proportioned approach over-estimated Herefordshire's current landbank by c.2 million tonnes. Recognising the lack of detail available for minerals data, the difference between these two conclusions is not considered to be significant.

3.3.17 It is not possible to report annual sales for crushed rock within Herefordshire. The proportioned approach is deliberately not applied to estimate annual sales of crushed rock. Table 3.5 shows that the average ten-year sales across the combined authorities is 948,800 tonnes. 5.77% of this would indicate an average ten-year sales figure of 54,700 tonnes in Herefordshire. If this were applied, it would indicate a landbank of over 100 years of crushed rock within Herefordshire (5.94 million tonnes divided by 54,700 tonnes).

3.3.18 At the site visits, made in November 2017, it appeared that both crushed rock quarries within Herefordshire were substantially worked out and both operators advised that extensions would be required in the foreseeable future. Applying the proportioned approach to sales is not a robust approach to take.

Aggregate Minerals Survey

3.3.19 Sales of crushed rock from Herefordshire are confidential due to the small number of operators in the county. However, the DCLG AMS 2005, 2009 and 2014 do provide data for imports and consumption of crushed rock for Herefordshire. These are reproduced in Table 3.7.

Table 3.7 Imports and consumption of crushed rock in Herefordshire

Year	2005	2009	2014
	Tonnes		
Import of crushed rock	1,522,000	421,000	533,000
Consumption of crushed rock	1,691,000	435,000	700,000

3.3.20 The data shows a significant drop in both imports and consumption in 2009 compared to 2005. This can be accounted for by the economic recession, which began around 2008 and led to a significant reduction in construction activity. Consumption in 2014 significantly increased, indicating some growth, and whilst imports also increased, this was by a lesser factor, indicating that Herefordshire may have decreased its reliance on crushed rock from elsewhere.

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

3.3.22 Annex B presents the BGS prepared Consumption of crushed rock for aggregate use in 2014, identifying for each sub-region the principal supplying MPA. Again, this has not been verified by the BGS, but is the only such available data set.

3.3.23 It indicates that Herefordshire was 20% to 30% self-sufficient in crushed rock provision in 2014, which is reflected in Table 3.7 above. Crushed rock is overwhelmingly imported from Powys (40% to 50%) but also from Somerset (10% to 20%).

3.3.24 This indicates that crushed rock travels very much further than sand and gravel, indeed the rail head at Wellington Quarry is used to transport crushed rock from Tarmac quarries in Wales to the south east of England, primarily London. Again, the primary export destination is Worcestershire (10% to 20%) which is known to have little crushed rock reserve.

4. Aggregates, Future Demand

4.1 Introduction

4.1.1 Sections 3.2 and 3.3 indicate that within Herefordshire, under current operations and market conditions, there is an appropriate landbank of sand and gravel, but a potential shortfall of crushed rock.

4.1.2 Looking forward, demand for aggregates can be estimated in a number of different ways. The methods most commonly used are:

- Gross Value Added ('GVA') forecasts;
- population projections;
- household or housing projections; and/or
- Core Strategy infrastructure requirements.

4.1.3 Each of these methods are considered for sand and gravel. It should be remembered that aggregate is more than just sand and gravel, but current information does not enable the same level of analysis to be undertaken for crushed rock.

4.1.4 National policy seeks to promote the use of alternatives to primary aggregates by encouraging the use of recycled aggregates as a substitute. The principal source of recycled aggregates is waste arising from construction and demolition activities. In parallel with this MNA 2019, an assessment of the need for waste infrastructure has been undertaken. The WNA 2019 has, inter alia, forecast estimates for the amount of construction and demolition waste arising in Herefordshire annually up to 2041 and these forecasts are reproduced in section 4.4 of this Assessment.

4.2 Growth Forecasts

Gross Value Added forecasts

4.2.1 Overall growth in the economy can be measured through projected growth in Gross Value Added (GVA). Projected change in GVA could be applied to the most recent sand and gravel annual sales data in order to estimate the potential change in demand for sand and gravel on the basis that it is changes in levels of economic wealth that drive demand for construction of buildings and infrastructure.

4.2.2 Herefordshire's GVA in 2017 was £3,878 million[21]. However, there is little data available on projected GVA for Herefordshire over the timeframe of the MWLP.

4.2.3 The Marches Local Enterprise Partnership (the 'LEP'), which covers Shropshire, Herefordshire and Telford & Wrekin, published a Strategic Economic Plan[22] (the 'SEP') in 2019. The vision of the SEP is to grow the economy from £8.78 billion 2016 to 23.8 billion by 2038, which is equivalent to an average annual growth of 2.3% per annum in GVA. However, SEP Evidence

[21] https://understanding.herefordshire.gov.uk/economy-place/topics-relating-to-the-economy/

[22] https://www.marcheslep.org.uk/download/economic_plans/strategic-economic-plan-update-2019/The-Marches-LEP-Strategic-Economic-Plan-2019.pdf

Base[23] (October 2018) reports that the GVA growth between 2014 and 2016 was only 0.9%, which highlights the ambitious nature of the SEP.

4.2.4 A briefing paper[24] on regional and country economic indicators produced by the House of Commons Library shows the GVA of the West Midlands region in 2018 to be £160 billion. It forecasts that this will grow at an annual average of 1.1% over the period 2019-2029. This percentage growth rate could be applied to 2018 aggregate sales to estimate the potential demand for aggregates arising from growth in the economy.

4.2.5 The Office for Budget Responsibility (the 'OBR') publishes an economic and fiscal outlook at the national level, the most recent of which[25] was published in March 2019. This produces a range of forecasts for real Gross Domestic Product ('GDP') growth from 2019 to 2023.

4.2.6 The OBR outlook reports a central forecast and four higher and four lower forecasts, representing probability bands based on past official forecast errors. Risks to the central forecast include: risks to growth from productivity and migratory flows and the risks from shocks; fiscal risks associated with a large financial sector; the sustainability of various tax bases; risk from changes or delays to policies; balance sheet risks; and debt interest risks.

4.2.7 Table 4.1 shows the central GDP growth forecast (50% column) and also a range of eight other growth forecasts for each year, four higher and four lower than the central forecast, to allow for differing degrees of uncertainty in the forecasting.

Table 4.1 Projected annual percentage change in GDP by probability bands

Year	Percentage probability bands								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
2018					1.4				
2019	0.1	0.5	0.7	1.0	1.2	1.5	1.8	2.1	2.6
2020	-0.8	0.0	0.6	1.0	1.4	1.8	2.3	2.7	3.3
2021	-1.0	-0.1	0.6	1.1	1.6	2.0	2.5	2.9	3.5
2022	-1.1	-0.2	0.5	1.1	1.6	2.1	2.5	3.0	3.6
2023	-1.2	-0.2	0.5	1.1	1.6	2.1	2.6	3.1	3.8

4.2.8 There are other forecasts of economic growth available, notably those produced independently by the information services company Experian. Experian has produced national, regional and county-level forecasts which show projected growth in the whole economy and the construction sector to 2037. Unfortunately, data for Herefordshire is combined with Worcestershire and is not available separately. As the Experian data only runs to 2037, the growth from 2036 to 2037 has been used for the years 2038 to 2041 to cover the plan period.

[23] https://www.marcheslep.org.uk/download/economic_plans/strategic-economic-plan-update-2019/The-Marches-SEP-Evidence-Base.pdf

[24] Regional and Country Economic Indicators: Briefing Paper number 06924, House of Commons Library, February 2020, https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06924#fullreport

[25] Economic and Fiscal Outlook, Office for Budget Responsibility, March 2019, https://obr.uk/efo/economic-fiscal-outlook-march-2019/

4.2.9 GVA forecasts specific to Herefordshire and Worcestershire were obtained from Experian for the MNA 2017. These were used in the MNA Update 2018 and have been used again for this Assessment. The Experian forecast shows projected national GVA over the same period to be lower than compared to their pre-referendum outlook given post-Brexit uncertainties.

4.2.10 Table 4.2 shows the Experian annual forecast growth for Herefordshire and Worcestershire up to 2037, for the whole economy and for the construction sector separately.

4.2.11 The Experian forecasts to 2023 and 2029 for the West Midlands are higher than those forecast by the House of Commons Library briefing paper to 2029 and the central forecast of the Office for Budget Responsibility for national growth to 2023.

Table 4.2 Experian forecasts of economic growth for Herefordshire and Worcestershire, 2016 to 2037

Year	Whole economy	Construction sector
2016	1.4%	-1.5%
2017	0.8%	-0.4%
2018	1.3%	0.0%
2019	1.5%	1.0%
2020	1.9%	1.7%
2021	2.0%	1.9%
2022	2.2%	2.0%
2023	2.4%	2.0%
2024	2.2%	1.9%
2025	2.0%	2.0%
2026	1.9%	1.8%
2027	1.8%	1.6%
2028	1.7%	1.4%
2029	1.6%	1.2%
2030	1.7%	1.2%
2031	1.7%	1.2%
2032	1.7%	1.2%
2033	1.7%	1.2%
2034	1.6%	1.2%
2035	1.6%	1.2%
2036	1.6%	1.3%
2037	1.6%	1.3%

4.2.12 The latest forecast from the Construction Products Association[26] is that construction output nationally is forecast to grow at 0.5% in 2020 and 0.9% in 2021. These figures are very much lower than the Associations' 2016 forecast (referenced in the MNA 2017) and 2018 forecast (referenced in the MNA Update 2018) and lower than the Experian short-term forecast for the sector in Herefordshire and Worcestershire.

4.2.13 There is a relatively wide range of GVA growth forecasts which may be used to calculate future sand and gravel demand.

4.2.14 The OBR outlook is not considered appropriate for two reasons. First, the forecast is for the UK as a whole and therefore gives no localised definition to growth forecasts. Second, the forecast is to 2023 only and provides no indication of how this could be extrapolated up to 2041.

4.2.15 The Construction Products Association forecast is also not pursued further as it is a forecast for the UK as a whole and there is no indication of how to extrapolate it beyond 2021.

4.2.16 The Marches LEP SEP growth aim is also not pursued, as it is more of a target than a forecast and is not mirrored in recent evidence.

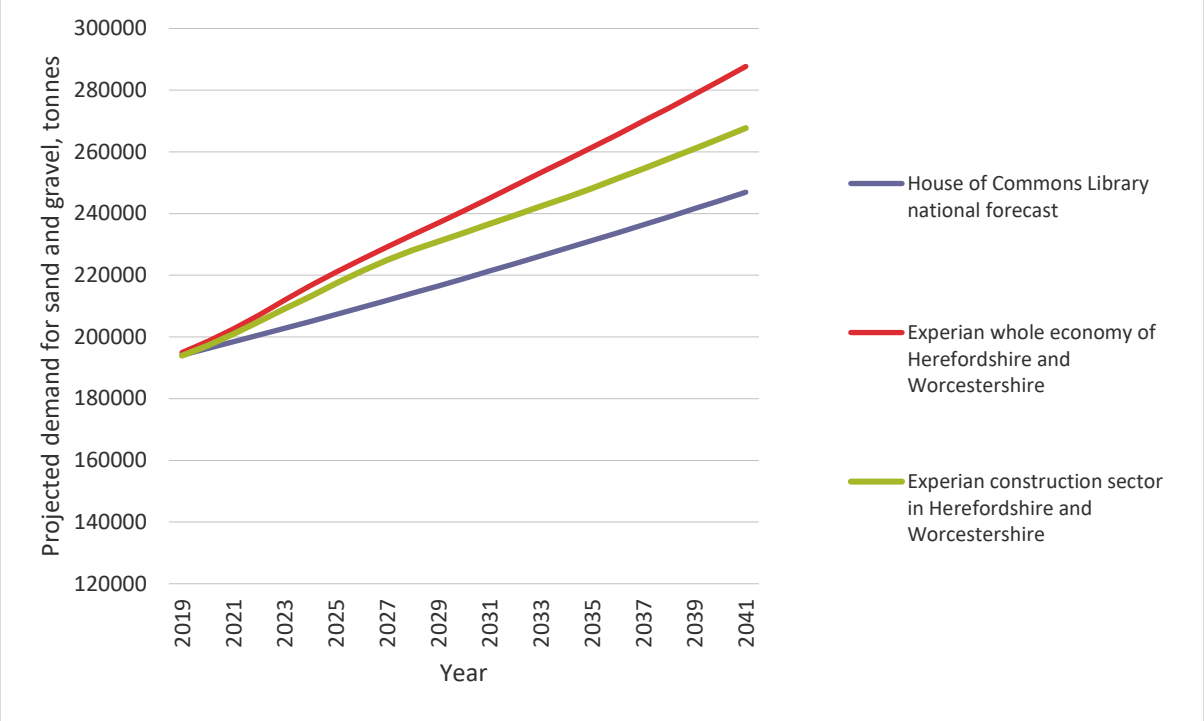
4.2.17 The three forecasts of GVA considered most relevant to derive a range of scenarios for future demand for aggregates are:

- The House of Commons Library briefing paper forecast of 1.3% per annum, extrapolated at the same annual growth rate from 2029 to 2036 to be extended to 2041;
- The Experian forecast for the whole economy of Herefordshire and Worcestershire to 2037, extended to 2041;
- The Experian forecast for the construction sector in Herefordshire and Worcestershire to 2037, extended to 2041.

4.2.18 These growth rates have the benefit of being independent of any one industry, locally focused, but also providing a national comparator. The demand calculated from these GVA forecasts is shown in Figure 4.1.

[26] https://www.constructionproducts.org.uk/news-media-events/news/2018/april/construction-output-forecast-to-flatline-in-2018/

Figure 4.1 Projected demand for sand and gravel in Herefordshire based on selected GVA forecasts



4.2.19 Using this method, it is calculated that, at 2041, demand for sand and gravel would be between 247,000 and 288,000 tonnes per annum, equating to a ten year annual average in 2041 of between 235,000 and 268,000 tonnes.

4.2.20 If demand for sand and gravel should rise in line with forecasts for GVA and no additional reserves are permitted, reserves will have fallen to zero tonnes in 2030 if the Experian whole economy forecast for Herefordshire and Worcestershire is used (the highest GVA forecast). A predicted ten-year average annual sales figure of 268,000 tonnes in 2041 using this forecast gives a landbank of 0 years for sand and gravel. The Experian whole economy forecast indicates a need for 4,944,000 tonnes of sand and gravel to be permitted throughout the plan period, in order to retain a seven-year landbank at 2041.

4.2.21 The figures in the above two paragraphs are based on the assumption that Herefordshire would continue to be reliant on imports of sand and gravel to meet 54% of its needs, a figure taken from the AMS 2014. If Herefordshire were to be self-sufficient in sand and gravel production, then in 2041 demand for sand and gravel would be between 539,000 and 628,000 tonnes and the landbank would have fallen to zero in 2024 (with the Experian whole economy forecast) if no new reserves are permitted.

4.2.22 The Experian whole economy forecast indicates a need for 13,716,000 tonnes of sand and gravel to be permitted throughout the plan period, in order to retain a seven-year landbank at 2041.

4.2.23 It is not possible to generate a forecast for crushed rock using GVA forecasts, because data is not available on current sales to which to apply the GVA multipliers.

Population projections

4.2.24 The (undated) publication Planning 4 Minerals: A Guide on Aggregates, published by the Quarry Products Association, the British Marine Aggregate Producers Association, the BGS and Entec UK Ltd (hereafter referred to as 'Planning 4 Minerals') suggests that demand for aggregates in the UK is equivalent to a little under 4 tonnes per head per annum. Population projections data can therefore be used to assess the possible implications of population changes for future demand for aggregate.

4.2.25 The latest sub-national population projections were published by the ONS in May 2018. However, the most recent consumption data is gained from the DCLG AMS 2005, 2009 and 2014. Applying the consumption data provided in these data sets and mid-year population estimates from the ONS for 2005, 2009 and 2014 gives the per capita consumption of aggregates as 13.1 tonnes, 3.4 tonnes and 4.6 tonnes respectively. This calls into question the reliability of applying such multipliers regardless of geography or levels of economic activity.

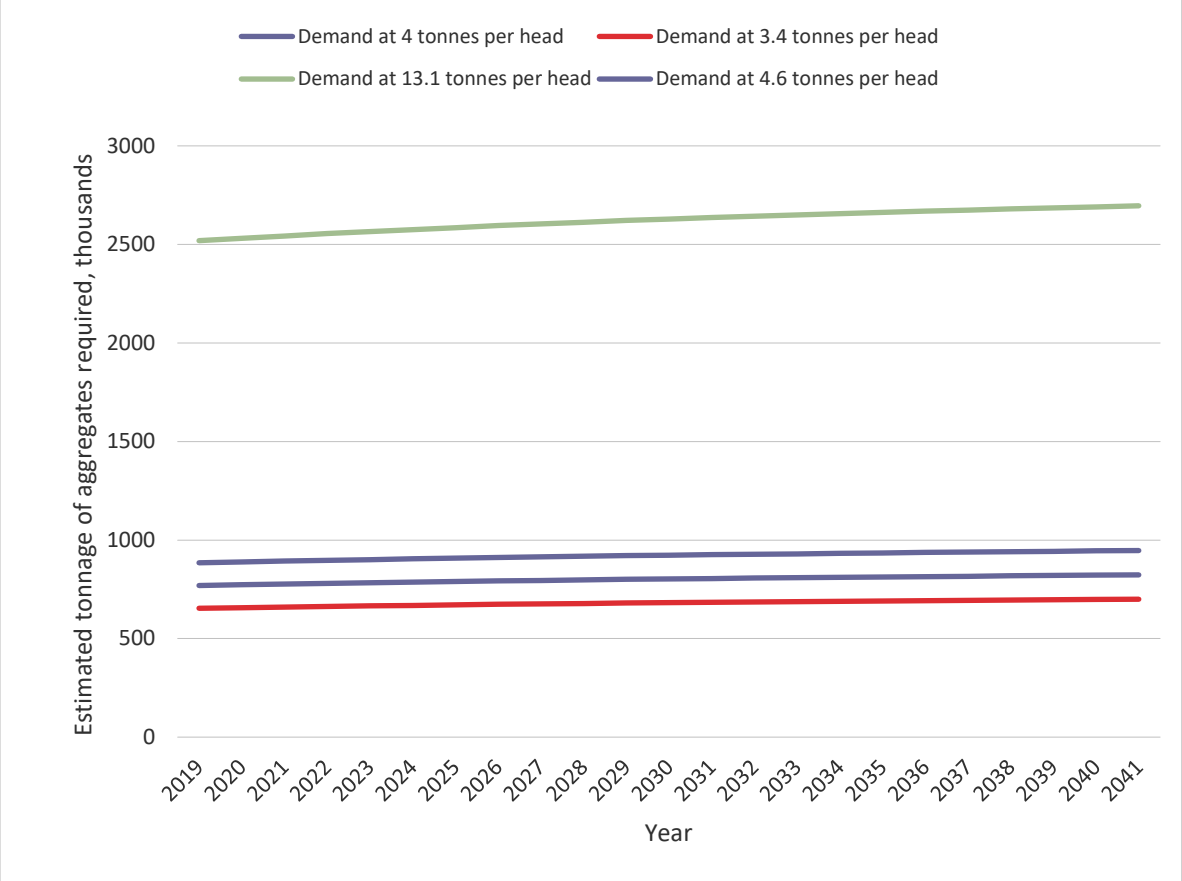
4.2.26 Table 4.3 presents the population projections for Herefordshire by year and the calculated consequent demand for aggregates using each of the rates identified. The assumptions of 4 tonnes, 4.6 tonnes and 3.4 tonnes per head per annum are reasonably consistent; consequently, Table 4.3 includes demand based on 13.1 tonnes per head per annum, as derived from the DCLG AMS 2005. These multipliers have limitations in that the 2009 and 2014 figures take no account of the possibility of an increase in economic vitality in Herefordshire over the period to 2039, while the 2005 figure may overestimate economic vitality in the short to medium term. For each, their long-term accuracy is very unclear.

Table 4.3 Projected population and associated demand

Year	Population (thousands)	Demand at			
		4 tonnes per head	4.6 tonnes per head	3.4 tonnes per head	13.1 tonnes per head
2019	192.3	769.2	884.6	653.8	2519.1
2020	193.2	772.8	888.7	656.9	2530.9
2021	194.1	776.4	892.9	659.9	2542.7
2022	195.0	780.0	897.0	663.0	2554.5
2023	195.8	783.2	900.7	665.7	2565.0
2024	196.6	786.4	904.4	668.4	2575.5
2025	197.3	789.2	907.6	670.8	2584.6
2026	198.1	792.4	911.3	673.5	2595.1
2027	198.8	795.2	914.5	675.9	2604.3
2028	199.4	797.6	917.2	678.0	2612.1
2029	200.1	800.4	920.5	680.3	2621.3
2030	200.6	802.4	922.8	682.0	2627.9
2031	201.2	804.8	925.5	684.1	2635.7
2032	201.7	806.8	927.8	685.8	2642.3
2033	202.2	808.8	930.1	687.5	2648.8
2034	202.7	810.8	932.4	689.2	2655.4
2035	203.2	812.8	934.7	690.9	2661.9
2036	203.7	814.8	937.0	692.6	2668.5
2037	204.1	816.4	938.9	693.9	2673.7
2038	204.6	818.4	941.2	695.6	2680.3
2039	205.0	820.0	943.0	697.0	2685.5
2040	205.4	821.6	944.8	698.4	2690.7
2041	205.8	823.2	946.7	699.7	2696.0

4.2.27 Figure 4.2 presents the four population-based forecasts for aggregate demand. It should be noted that this is total aggregate demand arising from population growth within Herefordshire. This can be met through supply of sand and gravel, crushed rock, and secondary, recycled and marine aggregates, and, continuing a long running trend, this could be from supply outside the county.

Figure 4.2 Estimated tonnages of aggregates required in Herefordshire based on population projections



4.2.28 Using this method, it is calculated that at 2041 an aggregate demand of between 700,000 and 2,696,000 tonnes per annum would be sought, equating to a ten year annual average in 2041 of between 693,000 and 2,670,000 tonnes.

4.2.29 It is considered that the forecast on the basis of 13.1 tonnes of aggregate per head is unrealistically high. The forecast is derived on the basis of pre-recession levels of per capita demand, a time when national GDP growth was as high as 6.7% per annum in the fourth quarter of 2005[27]. Current forecasts indicate that growth over the lifetime of the MWLP is unlikely to return to such high levels and therefore this forecast has been ruled out of further consideration.

4.2.30 Using the forecast on the basis of 4.6 tonnes per head of aggregate, being the highest of the remaining forecasts, the annual aggregate demand in 2041 would be 947,000 tonnes. Assuming 28% of this demand would be met by secondary and recycled aggregates (paragraph 4.5.1) 682,000 tonnes of primary aggregate would be required to meet this level of demand.

4.2.31 Taking the most recent (2014) data for the proportion of demand met by land-won sand and gravel (18%) and by crushed rock (82%) (see Tables 3.3 and 3.7 respectively) 123,000 tonnes

[27] https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/ihyo/ukea

of this would be demand for land-won sand and gravel and 559,000 would be demand for crushed rock.

4.2.32 Tables 3.3 and 3.7 further show that 46% of land-won sand and gravel demand and 24% of crushed rock demand was met by production within Herefordshire, which suggests 56,000 tonnes of sand and gravel and 134,000 tonnes of crushed rock would need to be mined within Herefordshire to meet demand assuming levels of import remain the same as currently. These figures are significantly different from those reported in the MNA 2017 but similar to those reported in the MNA Update 2018.

4.2.33 With permitted reserves for sand and gravel in Herefordshire standing at 2,476,000 tonnes in 2018 and sales in 2018 of 192,000 tonnes, the current landbank is 21.5 years for sand and gravel. This would ensure sufficient supply up to 2039 if demand were to stay at current levels. If demand rose in line with population projections, to 56,000 tonnes per annum as estimated in the above paragraph, and no additional reserves are permitted, reserves will have fallen to 1,214,000 tonnes in 2041 (using the forecast based on 4.6 tonnes per head of aggregate demand). A predicted ten-year average annual sales figure of 56,000 tonnes in 2041 using this forecast gives a landbank of 21.7 years for sand and gravel.

4.2.34 The figures in the above paragraph are based on the assumption that Herefordshire would continue to be reliant on imports of sand and gravel to meet 54% of its needs, a figure taken from the AMS 2014. If Herefordshire were to be self-sufficient in sand and gravel production, then in 2041 demand for sand and gravel would be 123,000 tonnes and the landbank would have fallen to 0 years by 2039 if no new reserves are permitted. The assumption of 4.6 tonnes per head of aggregate demand indicates a need for 1,118,000 tonnes of sand and gravel to be permitted throughout the plan period, in order to retain a seven-year landbank at 2041.

4.2.35 This scenario indicates that new sand and gravel reserve is required to maintain the seven-year landbank at 2041. This is different from the conclusion for the MNA 2017 and MNA 2018.

4.2.36 Although the current level of supply of crushed rock within Herefordshire is unknown, the total forecast demand for 2019-2041 on the basis of 4.6 tonnes of aggregate demand per head is 2,999,000 tonnes. This figure is substantially higher than that reported in the MNA 2017 and MNA 2018. Nevertheless, it is significantly below 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 (see Table 3.5) and 5.94 million tonnes assumed reserve for 2018 (paragraph 3.3.9).

4.2.37 The figures in the above paragraph are based on the assumption that Herefordshire would continue to be reliant on imports of crushed rock to meet 76% of its needs, a figure taken from the AMS 2014. If Herefordshire were to be self-sufficient in crushed rock production, and assuming a 5.94 million tonne reserve in 2018, then total forecast demand for 2019-2041 for crushed rock would be 12,495,000 tonnes and the landbank would have fallen to 0 years in 2030 if no new reserves are permitted.

Household projections

4.2.38 Planning 4 Minerals indicates that 60 tonnes of aggregate are required to build a typical house, with around 400 tonnes in total being required when associated infrastructure is taken into account. Household projections data can therefore be used to assess the possible implications of household changes for future demand for aggregate.

4.2.39 The ONS predicts household projections at local authority level, with the most recent published in September 2018[28]. Table 4.4 shows estimated demand on the basis of 400 tonnes of aggregate required for both housing and associated infrastructure for the increase in households predicted by ONS.

Table 4.4 ONS household projections and associated demand for aggregates, 2017 to 2041

Year	ONS household projections	Aggregates required (thousand tonnes)
2017	81.570	187.2
2018	82.047	190.8
2019	82.538	196.4
2020	82.989	180.4
2021	83.408	167.6
2022	84.010	240.8
2023	84.589	231.6
2024	85.183	237.6
2025	85.742	223.6
2026	86.277	214.0
2027	86.820	217.2
2028	87.359	215.6
2029	87.877	207.2
2030	88.362	194.0
2031	88.852	196.0
2032	89.323	188.4
2033	89.795	188.8
2034	90.232	174.8
2035	90.668	174.4
2036	91.115	178.8
2037	91.531	166.4
2038	91.943	164.8
2039	92.331	155.2
2040	92.679	139.2
2041	93.090	164.4

28 https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/householdprojectionsforengland

4.2.40 However, this approach has limitations, in that it takes no account of variations in household type, either between local authority areas or over time in any one authority, both of which can affect the type of housing required, the associated infrastructure and the consequent level of demand for aggregates. Furthermore, it does not allow for changes in construction practices and materials or improvements in resource efficiency in house construction.

4.2.41 An alternative approach would be to look at the housing trajectory set out in the Herefordshire Local Plan Core Strategy 2011-2031 (the Core Strategy) and compare this to historic housing completion rates, available from MHCLG statistical tables[29,30], and Herefordshire's Annual Monitoring Reports[31]. This comparison could be used to derive a percentage multiplier that can then be applied to the most recent ten year average annual aggregates sales figure in order to project aggregate requirements over the period of the Core Strategy.

4.2.42 However, with the extension of the time period for the MWLP to 2041, the Core Strategy housing trajectory now covers only the first half of the MWLP. The likely housing trajectory after 2030/31 is not currently known. Using the housing trajectory for the current Core Strategy would therefore be of little use for estimating aggregate demand.

4.2.43 Therefore, the ONS household projections have been used in this Assessment to estimate demand for aggregate over the period of the MWLP, replacing the use of the Core Strategy in previous MNA.

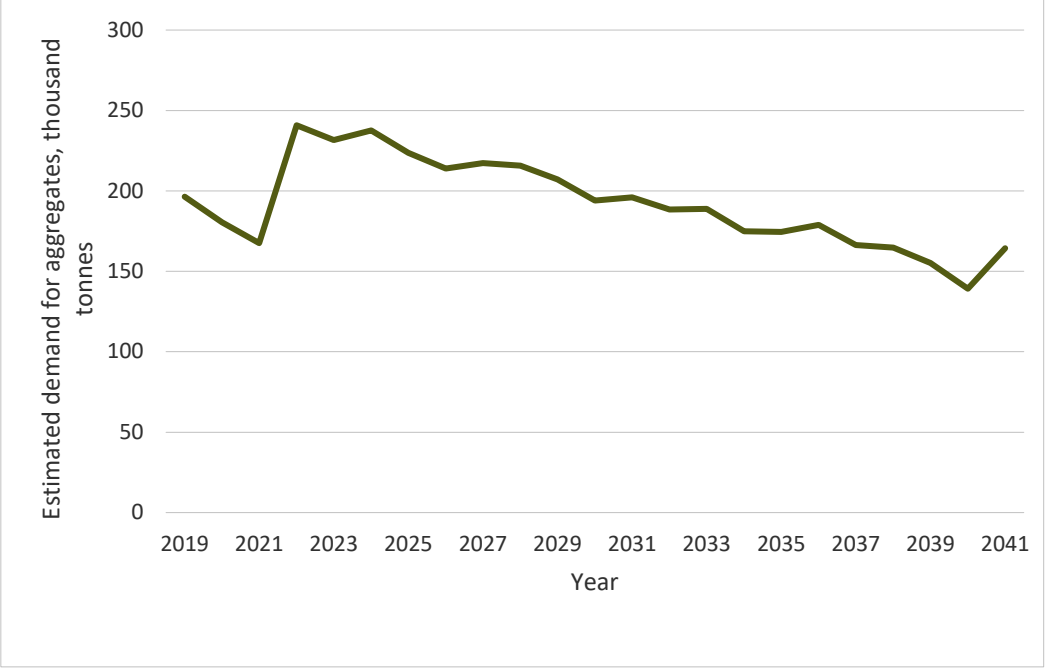
4.2.44 Figure 4.3 shows the projected total aggregate demand in Herefordshire calculated on the basis of the ONS household projections.

[29] https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building

[30] It is recognised that managing housing statistics has moved from DCLG/MHCLG to the ONS and that the ONS has revised both past and forecast housing numbers. The difference in housing numbers is considered insignificant and unlikely to change the outcome of this Update. Not least as demonstrated in the WNA 2019, the most change is likely to be a decrease of demand. This Assessment continues to rely upon the MHCLG data.

[31] https://www.herefordshire.gov.uk/info/200185/local_plan/142/authority_monitoring_reports

Figure 4.3 Estimated demand for aggregates in Herefordshire based on ONS household projections



4.2.45 Using this method, it is calculated that in 2041 a total aggregate demand of 1,096,000 tonnes per annum would be sought, equating to a ten year annual average in 2041 of 1,130,000 tonnes.

4.2.46 Assuming 28% of this demand would be met by secondary and recycled aggregates (paragraph 4.5.1) 789,000 tonnes of primary aggregate would be required to meet this level of demand. Taking the most recent (2014) data for the proportion of demand met by land-won sand and gravel (18%) and by crushed rock (82%) (see Tables 3.3 and 3.7 respectively) 142,000 tonnes of this would be demand for land-won sand and gravel and 647,000 tonnes would be demand for crushed rock.

4.2.47 Tables 3.3 and 3.7 further show that 46% of land-won sand and gravel demand and 24% of crushed rock demand was met by production within Herefordshire, which suggests 65,000 tonnes of sand and gravel and 155,000 tonnes of crushed rock would need to be mined within Herefordshire to meet demand.

4.2.48 With permitted reserves for sand and gravel in Herefordshire standing at 2,476,000 tonnes in 2018 and sales in 2018 of 192,000 tonnes, the current landbank is 21.5 years for sand and gravel, which would ensure sufficient supply up to 2039 if demand were to stay at current levels. If demand rose in line with the ONS household projections to 65,000 tonnes per annum as estimated in the above paragraph, and no additional reserves are permitted, reserves will have fallen to 720,000 by 2041 sufficient for a 10.7 year landbank at that point of the MWLP.

4.2.49 The figures in the above paragraph are based on the assumption that Herefordshire would continue to be reliant on imports of sand and gravel to meet 54% of its needs, a figure taken from the AMS 2014. If Herefordshire were to be self-sufficient in sand and gravel production,

then in 2041 demand for sand and gravel would be 142,000 tonnes and the landbank would have fallen to zero by 2032 if no new reserves are permitted.

4.2.50 This indicates a need for 2,366,000 tonnes of sand and gravel to be permitted throughout the plan period, in order to retain a seven-year landbank at 2041.

4.2.51 Although the current level of supply of crushed rock within Herefordshire is unknown, the total forecast demand for 2019 to 2041 on the basis of the ONS household projections is 4,173,000 tonnes, significantly below 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 (Table 3.5) and 5.94 million tonnes assumed reserve for 2018 (paragraph 3.3.9).

4.2.52 The figures in the above paragraph are based on the assumption that Herefordshire would continue to be reliant on imports of crushed rock to meet 76% of its needs, a figure taken from the AMS 2014. If Herefordshire were to be self-sufficient in crushed rock production and assuming a 5.94 million tonne reserve in 2018, then total forecast demand for 2019-2041 for crushed rock would be 17,386,000 tonnes and the landbank would have fallen to zero in 2026.

Core Strategy Infrastructure Requirements

4.2.53 The infrastructure requirements arising from policies in the Core Strategy have been examined, with reference to Appendix 5, which lists the necessary infrastructure for strategic sites, as well as to the text of the Core Strategy itself. The main infrastructure proposals which could have a significant demand for aggregates within the period of the MWLP have been identified and these are listed in Table 4.6.

4.2.54 Table 4.6 also shows the main infrastructure proposals that were planned by the earlier Herefordshire Unitary Development Plan[32] for comparative purposes.

4.2.55 No data is available to enable estimates to be made of the likely demand for aggregates arising from the construction of the development. However, Table 4.6 shows that the infrastructure needs arising from the Core Strategy are similar in nature and scale to those arising from the Unitary Development Plan. There is therefore no indication to suppose that there will be a significant change in the demand for aggregates over the life of the Core Strategy when compared to the period since the adoption of the Unitary Development Plan.

4.2.56 It is recognised that the Core Strategy is currently being revised and the future level of infrastructure provision is not known. However, the purpose of this exercise is to consider, proportionally, what the impact might be on future aggregate demand. The outcome is consequently still relevant to this Assessment.

[32] Herefordshire Unitary Development Plan, Herefordshire Council, March 2007

Table 4.6 Planned infrastructure in Herefordshire with a potentially significant aggregate requirement

Unitary Development Plan 1996-2011	Core Strategy 2011-2031
12,200 dwellings over plan period (813 dpa) 800 dpa 2001-2007 600 dpa from 2008 onwards	16,500 dwellings over plan period (825 dpa) 600 dpa 2011-2016 850 dpa 2016-2021 900 dpa 2021-2026 950 dpa 2026-2031
100 ha of Part B employment land	148 ha of employment land
14-16,000m^2 of retail floorspace	
11-15,000m^2 of retail warehouse floorspace	
12-14,000m^2 of office floorspace	
Edgar Street Grid: A new canal basin (residential, commercial, leisure, bars, hotel) A new civic quarter (public offices, library, retail, leisure, visitor amenities) Modernisation and relocation of Hereford United FC Multiplex cinema	New urban village in Eign Gate and Edgar Street regeneration areas including: canal basin 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 Roman Road improvements 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

4.3 Conclusions for sand and gravel

Availability

4.3.1 Section 4.1 sets out a number of forecasts for future sand and gravel demand using a range of forecasts based on GVA growth, on population projections and on the ONS household projections. Table 4.7 summarises the estimates calculated on the basis of a selection of these forecasts.

Table 4.7 Summary of sand and gravel forecast demand at 2041, assuming current level of import

Current level of import Scenario	Demand (tonnes)	Permitted reserve (tonnes)	Landbank	Tonnage required to maintain 7 year landbank
GVA growth (highest forecast)	288,000	0	0 years	4,944,000
Population growth, demand at 4.6 tonnes of aggregate per head	56,000	1,214,000	21.7 years	0
ONS household projections	65,000	720,000	10.7 years	0

4.3.4 Table 4.7 shows that, depending on the forecast method used, there may be sufficient permitted reserves of sand and gravel remaining for the lifetime of the MWLP, or there may be an insufficient landbank remaining at the end of the plan period. By 2041, if the highest GVA growth projection is used, the landbank will have fallen to zero, requiring just under 5 million tonnes of new reserve. Using population growth or household projections as the basis for a forecast, the landbank would still be sufficient in 2041, requiring no new reserves.

4.3.5 The figures in Table 4.7 are calculated based on the assumption that Herefordshire would continue to be reliant on imports of sand and gravel to meet 54% of its needs, a figure taken from the AMS 2014.

4.3.6 If Herefordshire was to be self-sufficient in sand and gravel, Table 4.8 shows that no forecast predicts a sufficient landbank for sand and gravel in 2041 if no new reserves are permitted. Table 4.8 indicates a wide range of between 1.1 and 13.7 million tonnes of new reserve required to enable self-sufficiency at 2041.

Table 4.8 Summary of sand and gravel forecast demand at 2041, assuming self-sufficiency in sand and gravel production

Self-sufficient Scenario	Demand (tonnes)	Permitted reserve (tonnes)	Landbank	Tonnage required to maintain 7 year landbank
GVA growth (highest forecast)	628,000	0	0 years	13,716,000
Population growth, demand at 4.6 tonnes of aggregate per head	123,000	0	0 years	1,118,000
ONS household projections	142,000	0	0 years	2,366,000

4.3.9 It is acknowledged that these outcomes have been calculated through forecasts relying upon a number of assumptions, some of which are based on data for single years and some of which is becoming dated. However, if during the course of the development of the MWLP better data becomes available, this can be used to improve the forecasts produced wherever appropriate.

Flexibility

4.3.10 Wellington Quarry is the only established sand and gravel quarry in Herefordshire (at the time of writing) with permitted reserves constituting over half the total permitted reserves within the county. Current planning conditions require that the winning and working of minerals must cease by 31 December 2026.

4.3.11 Upper Lyde Quarry commenced extraction in September 2019 and is required to be restored within a period of 10 years; September 2029.

4.3.12 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 of sand and gravel to become operational to meet demand from 2027 onwards.

4.4 Conclusions for crushed rock

Availability

4.4.1 There is, generally, a lack of data in relation to crushed rock within Herefordshire.

4.4.2 Two methods have been considered for forecasting the potential future demand. These have produced widely varying forecasts of demand for 2019-2041. Calculations have been made for two different scenarios, on the basis of whether Herefordshire continues to rely on imports of crushed rock to meet 76% of its needs, and on the basis of Herefordshire being self-sufficient in crushed rock production.

Table 4.9 Summary of crushed rock forecast demand at 2041, assuming current level of import and self-sufficiency

Scenario	Demand 2019-2041	
	Assuming imports at current level	Assuming self-sufficiency
Population growth, demand at 4.6 tonnes of aggregate per head	2,999,000	12,495,000
ONS household projections	4,173,000	17,386,000

4.4.4 Table 4.9 shows that demand for crushed rock could exceed even 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 (see Table 3.5).

4.4.5 It is acknowledged that these outcomes have been calculated through forecasts relying upon a number of assumptions, some of which are based on data for single years and some of which is becoming dated. However, if during the course of the development of the MWLP better data becomes available, this can be used to improve the forecasts produced wherever appropriate.

Flexibility

4.4.6 Of the two operational quarries for crushed rock in Herefordshire, Leinthall Quarry is required to cease operations by 2027, and therefore could not, currently, contribute to meeting demand after that date.

4.4.7 Perton Quarry can continue operations until 2042.

4.4.8 Therefore, regardless of which forecast most closely represents the real outcome for crushed rock over the lifetime of the MWLP there will likely be a need for additional reserves of sand and gravel to become operational to meet demand from 2027 onwards.

4.5 Secondary and recycled aggregates

4.5.1 The Mineral Products Association[33] estimates that secondary and recycled aggregates constituted 28% of total aggregate consumption in Great Britain in 2015.

4.5.2 There are currently no industrial processes in Herefordshire which are known to produce secondary aggregates[34]. There may be potential for some provision of secondary aggregates from existing quarrying operations; however there does not appear to be any current proposals for this activity. It is understood, from the site visits, that some hard rock dust from quarries in Wales is used in concrete block manufacture within Herefordshire.

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

[33] The Mineral Products Industry At A Glance: 2016 Edition, Mineral Products Association, 2016, http://www.mineralproducts.org/documents/Mineral_Products_Industry_At_A_Glance_2016.pdf

[34] Herefordshire Local Aggregates Assessment December 2019, Herefordshire Council, February 2020

4.5.4 The WNA 2019 (section 5.3) has produced 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. The forecasts are:

- Scenario 1a: Growth based on Herefordshire and Worcestershire construction sector GVA growth and a baseline figure of 393,000 tonnes in 2016 (calculated as per capita arisings using an UK per capita multiplier); and
- Scenario 2a: Growth based on Herefordshire and Worcestershire construction sector GVA growth and a baseline figure of 412,000 tonnes in 2016 (calculated as per capita arisings using an England waste per capita multiplier).

4.5.5 The forecasts are 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 the source of recycled aggregates.

4.5.6 However, not necessarily all of the arisings will be recovered for recycling. The latest figures from Defra[35] show that 92.1% of non-hazardous construction and demolition waste was recovered in England in 2014 and 91.0% for the UK as a whole. Therefore, in considering this data for minerals purposes the arisings forecast by the WNA 2019 have been reduced in accordance with these rates. The adjusted forecasts are set out in Table 4.10 and presented in Figure 4.4.

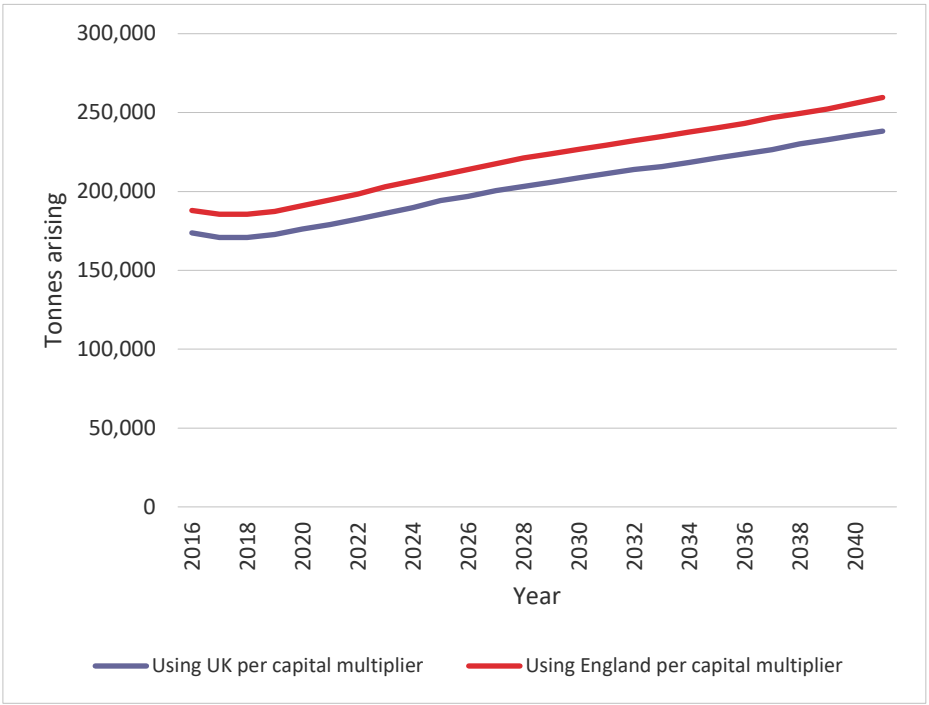
Table 4.10 Forecast arisings of recovered non-hazardous construction and demolition waste, Herefordshire, 2016 to 2041

Year	Using a UK per capita multiplier	Using an England per capita multiplier
2016	173,810	187,884
2017	170,810	185,542
2018	170,810	185,542
2019	172,608	187,370
2020	176,204	191,026
2021	178,901	194,682
2022	182,497	198,338
2023	186,093	202,908
2024	189,689	206,564
2025	194,184	210,220
2026	196,881	213,876
2027	200,477	217,532
2028	203,174	221,188

[35] Statistics on Waste Notice: Non-Hazardous Construction and Demolition Waste UK and England 2010-2016, Defra, March 2019

2029	205,871	223,930
2030	208,568	226,672
2031	211,265	229,414
2032	213,962	232,156
2033	215,760	234,898
2034	218,457	237,640
2035	221,154	240,382
2036	223,851	243,124
2037	226,548	246,780
2038	230,144	249,522
2039	232,841	252,264
2040	235,538	255,920
2041	238,235	259,576

Figure 4.4 Forecast arisings of recycled aggregates, Herefordshire, 2016 20 2041



4.5.7 The forecasts indicate that up to 260,000 tonnes of recycled aggregates could be gained from non-hazardous construction and demolition waste in Herefordshire by 2041. In simple terms, i.e. not considering all the different recycled aggregates produced, this could be provided by the proposed extensions to the operations undertaken at the Former Lugg Bridge site.

5. Other Minerals

5.1 Building Stone

5.1.1 The Annual Raised Enquiry prepared by the ONS provides data for building stone sales from Herefordshire. The most recent data for building stone is reproduced in Table 5.1. Prior to 2011, data on building stone was only provided at the regional level.

Table 5.1 Sales of building stone, Herefordshire, 2011 to 2014

Year	Building stone sales (tonnes)
2014	2,000
2013	2,000
2012	2,000
2011	2,000*

* Figure for Herefordshire and Worcestershire combined

5.1.2 The figures indicate a small and stable market for the sale of building stone from Herefordshire.

5.1.3 There are several active quarries for building stone within Herefordshire. Some of these have planning conditions imposed that require operations to cease within the lifetime of the MWLP. Llandraw Delve is required to cease working by 2021 and Tybubach Delve by 2030 at the latest (this site already appears to have ceased working). Westonhill Wood Delves are required to cease working by 2039, also within the plan period. Therefore, with the closure of some quarries before the end of the plan period, there may be a need to facilitate new permissions, or extended time periods, for the winning and working of building stone.

5.2 Conventional and Unconventional Hydrocarbons

5.2.1 Herefordshire has two areas that have been worked in the past for coal. However, such conventional extraction of hydrocarbons has ceased in Herefordshire and shows little sign of recommencing. In 1999, the BGS reported that the hydrocarbon prospectivity of the area was low.

5.2.2 Recently, new technologies have been developed for extracting hydrocarbons in an unconventional way that may allow the extraction of resources from deposits which were previously considered uneconomic.

5.2.3 The UK has a long history of onshore gas exploration and has developed a robust regulatory system to ensure that any such operations will be carried out to the highest standards of safety and environmental protection. The 14th Onshore Oil and Gas Licensing Round was launched on 28 July 2014 and applications were received from 47 companies covering 295 Ordnance Survey Blocks.

5.2.4 A Petroleum Exploration and Development Licence (PEDL) does not itself give any direct permission for operations to begin but grants the licensee exclusivity over an area of land for

onshore hydrocarbon exploration, appraisal and extraction. The exclusivity applies to both conventional and unconventional operations.

5.2.5 The PEDL are issued for an identified block of land, one of which, referred to as SO51a, included a small part of the south of Herefordshire around Whitchurch, Welsh Newton, Goodrich, Kerne Bridge, Hope Mansell and Marstow.

5.2.6 The PEDL for block SO51a is classified as coalbed methane, although the licence is for any hydrocarbon and is not limited to this classification. It was offered to South West Energy Limited, but the Oil and Gas Authority has confirmed that the licence was not taken up, and therefore no PEDL was awarded in this area. It is possible that the block could be subject to future licensing rounds, although the Oil and Gas Authority has not been able to provide any timeframe for that[36].

5.2.7 It is also of note that the NPPF was amended in May 2019 to remove support for oil and gas development, including unconventional hydrocarbons[37].

5.2.8 Activities related to hydrocarbon exploration or extraction will therefore not take place in Herefordshire, at least in the short term. It is therefore still possible, although perhaps unlikely, that hydrocarbon operations will take place in Herefordshire within the plan period, although this will be influenced by future developments in both policy and technology.

[36] Email exchange with OGA, March 2018

[37] Ministerial Written Statement (reference: HCWS1586) made on 23 May 2019 confirms that '*paragraph 209(a) of the National Planning Policy Framework has been quashed.'*

6. Conclusions

6.1 Overview

6.1.1 The previous sections have collated and analysed the available data on supply of and demand for minerals in Herefordshire. In many instances, data is unavailable and estimates have had to be made using assumptions based on information from other sources or from several years ago. While every attempt has been made to use reliable data, the figures derived can only be an indication of the actual position regarding supply of minerals, except in the cases of sand and gravel and building stone where actual figures are available.

6.1.2 When making projections of future demand, especially over a 15 to 20 year time-frame, estimates are by their nature uncertain and the true outcome is uncertain. A range of forecasts have been made to show the possible variation in outcome

6.1.3 On the basis of the estimates derived for supply and demand, it is possible to draw some conclusions about the balance between supply and demand for minerals. These conclusions have changed considerably from the MNA 2017 and Update 2018, reflecting the incorporation of new and updated information and extended plan period.

6.2 Aggregates

Sand and gravel

6.2.1 Clear data is held on the supply of sand and gravel and permitted reserves remaining.

6.2.2 In most of the scenarios considered, additional sand and gravel reserve is required to maintain a seven-year landbank at 2041.

6.2.3 Regardless of the demand forecast used, permitted quarry operations must cease within the plan period. There is therefore a need for additional reserves of sand and gravel to become operational before the end of the MWLP.

Crushed rock

6.2.4 Poor data is held on the supply of crushed rock and permitted reserves remaining.

6.2.5 Two methods have been provided for forecasting the potential future demand for crushed rock. These have produced widely varying forecasts of demand for 2019 to 2041. However, in both cases the forecast is significantly below the tonnes of permitted reserves data for 2013, the most recent year for which figures were available for Herefordshire separately from other counties. This assumes that Herefordshire continues to rely on imports of crushed rock at current levels.

6.2.6 If Herefordshire were to be self-sufficient in crushed rock production, then demand would outstrip the available permitted reserves extant in 2013.

6.2.7 Of the two operational quarries for crushed rock in Herefordshire, one is required to cease operations by 2027.

6.2.8 There is an indicated need for additional reserve of crushed rock to become operational before the end of the MWLP. However, recognising the poor data available and consequent

wide range of future demand, it is difficult to be precise on the amount of future reserve required.

Recycled aggregates

6.2.9 Herefordshire is a net importer of aggregates, and overwhelmingly so for crushed rock. As discussed above, there is an indicated need to secure more permitted reserves for both sand and gravel and crushed rock reserves. Recycled aggregates could have an increasingly important role to play in reducing the reliance on imports of aggregates.

6.2.10 Forecasts have been made for the potential arisings of recycled aggregates over the plan period. These have been calculated using a baseline of per capita arisings in Herefordshire and assumed to change over the plan period in line with forecasts for the change in GVA for the construction sector in Herefordshire and Worcestershire.

6.2.11 This gives a baseline for arisings of recycled aggregates in 2016 of between 174,000 tonnes and 188,000 tonnes, rising to between 238,000 tonnes and 260,000 tonnes by 2041. While a useful contribution to the supply of aggregates, these figures fall well short of the predicted tonnages required to meet the estimated demand calculated by reference to the ONS household projections.

6.3 Building stone

6.3.1 Clear (albeit not very recent) data is held on the supply of building stone and permitted reserves remaining.

6.3.2 There is a small and stable market for the sale of building stone from Herefordshire. This is important for retaining the local character of buildings and also has a market for quality construction in other parts of the country.

6.3.3 All of the active delves for building stone within Herefordshire are required to cease operations within the lifetime of the MWLP. Therefore, there may be a need for policy to address the winning and working of building stone to enable supply to continue to meet demand.

6.4 Hydrocarbons

6.4.1 There will not be any activities relating to the exploration or extraction of hydrocarbons within Herefordshire in the short term.

6.4.2 In the medium to long term, it is possible that this situation may change but the current position would indicate this is unlikely.

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