Worcestershire Local Aggregate Assessment: Data covering the period up to 31/12/2022

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1. Executive Summary

1.1. The Local Aggregate Assessment (LAA) is an assessment of the demand for and supply of aggregates in the county. Its prime purpose is to assist Worcestershire County Council (in its role as Mineral Planning Authority) in its efforts to provide for the steady and adequate supply of local aggregates. It will inform the development and monitoring of minerals planning policy in the county and will be a material consideration in the determination of planning applications.

1.2. This is the first LAA which uses data covering the period since the adoption of the Minerals Local Plan (2018-2036) (MLP) in July 2022.

Substitute, secondary and recycled aggregates

1.3. There is a lack of data about the contribution that substitute, secondary and recycled materials and minerals waste make to the supply of aggregate materials in Worcestershire. This LAA assumes that the contribution of substitute, secondary and recycled materials is already accounted for prior to considering the sales figures for primary aggregates.

Sand and gravel

1.4. There are two distinct types of sand and gravel deposits in Worcestershire:

- Bedrock deposits: solid sands of the Kidderminster Formation and Wildmoor Sandstone Formation

- Superficial deposits: river terrace deposits of the rivers Severn and Avon and glacial deposits found in association with boulder clay.

1.5. The LAA considers supply and demand indicators in relation to sand and gravel.

1.6. None of the demand indicators suggest that the production guideline should be lower than the 10-year average, and some (trends in annual sales figures, the historic sub-regional apportionment and predicted infrastructure requirements) suggest that the production guideline should be increased above the 10-year average. Supply indicators (including replenishment rates, site allocations, industry interest) suggest that an increase above the 10-year average could be accommodated.

1.7. Following consideration of these demand and supply factors, **the production guideline in this LAA is derived from the 10-year sales average +20%.** This scale of uplift will support the continuation of recent supply levels and mitigate any potential impacts on the production guideline from the former County of Hereford and Worcester Minerals Local Plan (1997) being in place well beyond its expected implementation period (up to July 2022), which may have led to lower annual sales due to additional barriers to development rather than lower levels of demand. The

20% uplift will also support the anticipated scale of demand for housing and infrastructure development and allow some flexibility in relation to demand for HS2 and other development needs. This approach will be kept under review in future LAAs, particularly to monitor the impact of the Worcestershire Minerals Local Plan (2018-2036) which was adopted in July 2022 and to reflect greater certainty about demand for HS2 once the project moves into a period of peak demand (which is likely to be reflected in 2023 and 2024 sales figures).

1.8. The annual production guideline for sand and gravel identified by this Local Aggregates Assessment is therefore 0.667 million tonnes per annum. Based on this production guideline and the stock of permitted reserves of 5.06 million tonnes, Worcestershire had a landbank of 7.59 years at 31st December 2022. This is slightly above the minimum 7-year landbank required by national policy.

1.9. It should be noted that this includes 1.5mt reserves at one site that is permitted in Worcestershire but is contingent on planning permission being granted for site access and processing plant within Gloucestershire. The application for the part of the site in Gloucestershire was refused and is currently subject to appeal.

Crushed rock

1.10. The following bedrock mineral deposits are believed to be the only strata in the county that have been worked to produce crushed rock aggregates:

- The Precambrian "Malverns Complex" and "Warren House Formation"
- The Silurian "Woolhope Limestone Formation"[1]
- The Ordovician "Lickey Quartzite Formation" and
- The Jurassic "Inferior Oolite Group".

1.11. Worcestershire has no permitted reserves, no productive capacity and no landbank for crushed rock. Whilst the 10-year sales average for crushed rock sales is 0 tonnes and there has been no production of crushed rock in Worcestershire since 2010, it is important to recognise that there is demand for crushed rock to meet needs within Worcestershire. There may also be an increasing need for crushed rock to be supplied from within Worcestershire as reserves are diminished elsewhere. This indicates that the annual production guideline should be increased above the 10-year average.

[1] Silurian "Aymestry Limestone Formation" deposits have also been worked in the past, but these are not considered to be a significant resource under the methodology set out in the background document *Analysis of Mineral Resources in Worcestershire* (available at www.worcestershire.gov.uk/mineralsbackground)

1.12. However, there are very significant limitations on Worcestershire's ability to supply crushed rock, both in the short and longer term. The lack of existing sites with permitted reserves and the lack of any planning applications pending decision means that there is no likelihood of supply from within Worcestershire in the immediate future. Although the Minerals Local Plan (2018-2036) provides increased certainty and policy support for crushed rock development in Worcestershire, it also recognises that there are significant constraints on Worcestershire's crushed rock resources. When combined with the lack of planning applications, pre-application discussions, and the fact that no sites for crushed rock have been proposed in response to five "calls for sites", this means that there is no certainty that Worcestershire will be able to provide crushed rock in the longer term.

1.13. This LAA concludes that the production guideline for crushed rock in Worcestershire is unable to be calculated, but that it is explicitly greater than 0 tonnes.

1.14. There is no data available to indicate how much of the demand for crushed rock has been met by substitution with either secondary or recycled materials or by sand and gravel. It is likely that the majority of Worcestershire's demand for crushed rock over recent years has been met by imports of crushed rock from outside the county. This was discussed in detail with the West Midlands, East Midlands, South West and South Wales Aggregate Working Parties during the development of the Minerals Local Plan, and Worcestershire County Council will continue to cooperate with the mineral planning authorities in these areas to understand whether Worcestershire's demand for crushed rock can continue to be accommodated.

LAA Dashboard

🡻 Indicates a decrease in comparison to the figure in the previous year's LAA.
🡹 Indicates an increase in comparison to the figure in the previous year's LAA.
- Indicates no change in comparison to the figure in the previous year's LAA.

	Sand and gravel	**Crushed rock**
Production (demand): 2022 sales	0.668 million tonnes 🡻	0 tonnes -
Production (demand): 3-year average sales (mean)	0.583 million tonnes 🡹	0 tonnes -
Production (demand): 10-year average sales (mean)	0.556 million tonnes 🡹	0 tonnes -
Production (demand): 'Baseline' production guideline which informed the adopted Minerals Local Plan	0.572 million tonnes This was the production guideline as calculated in the "Worcestershire Local Aggregate Assessment (using data up to December 2017)".	0.163 million tonnes This indicative provision figure was based on the sub-regional apportionment for Worcestershire derived from the "National and regional guidelines for aggregates provision in England 2001-2016".
Production: Annual Production Guideline	**0.667 million tonnes 🡻**	**Unable to be calculated, however is explicitly greater than 0 tonnes.**

	Sand and gravel	Crushed rock
Production: Informatives	Production guideline based on 10-year average plus 20%. This uplift will support the continuation of recent supply levels and mitigate any potential impacts on the production guideline from County of Hereford and Worcester Minerals Local Plan (1997) being in place well beyond its expected implementation period, thereby potentially depressing the annual sales figure due to additional barriers to development rather than lower levels of demand. The 20% uplift will also support the anticipated scale of demand for housing and infrastructure development and allow some flexibility in relation to demand for HS2 and other development needs.	Lack of production in Worcestershire means the 10-year sales average is zero tonnes. There is evidence of demand for (and consumption of) crushed rock which is being met through importation from other mineral planning authority areas, but there are significant constraints on Worcestershire's crushed rock resources. The lack of current interest from the minerals industry indicates that production of crushed rock in Worcestershire in the immediate future is highly unlikely.
Landbank: Permitted Reserves at 31st December 2022	5.06 million tonnes ↑	0 tonnes -
Landbank: Number of sites at 31st December 2022	4 active sites. 3 permitted sites. Note for one site mineral working in Worcestershire is permitted but development is contingent on planning permission being granted for site access and processing plant within Gloucestershire. The application for the part to the site in Gloucestershire was refused and is currently subject to appeal.	0 sites **-**
Landbank: Landbank at 31st December 2022 (based on annual production guideline)	**7.59 years ↑**	**0 years**
Landbank: Landbank requirement	7.00 years ✓	10.00 years ✗

	Sand and gravel	Crushed rock
Landbank: Informatives	56% of reserves are at active sites. 44% of permitted reserves are at site where planning permission is not yet implemented. Seven applications for new mineral extraction sites were under consideration or determined in 2022. Worcestershire is a net-exporter of sand and gravel. Sufficient sand and gravel resources exist in Worcestershire and evidence of interest from minerals industry suggest an increase above the 10-year average can be accommodated.	Crushed rock resources exist in Worcestershire, but there are no current permitted reserves. Worcestershire County Council recognises that some contribution towards crushed rock supply may be possible from Worcestershire's resources, but the lack of current interest from the minerals industry indicates that production of crushed rock in Worcestershire in the immediate future is highly unlikely. Discussions with the West Midlands, East Midlands, South West and South Wales Aggregate Working Parties have previously concluded that Worcestershire's production guideline for crushed rock should be 0 tonnes, but with the Minerals Local Plan providing a policy framework seeking to enable a contribution towards the provision of crushed rock from Worcestershire, it is considered that the production guideline should explicitly be greater than zero tonnes, although it is not possible to calculate an exact figure. The Mineral Planning Authorities of the West Midlands, East Midlands, South West and South Wales Aggregate Working Parties have indicated that supplying Worcestershire's demand for crushed rock can be accommodated at present.

Contents

2. Introduction

"*It is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. Since minerals are a finite natural resource, and can only be worked where they are found, best use needs to be made of them to secure their long-term conservation.*"

National Planning Policy Framework (2023), paragraph 209

2.1. The National Planning Policy Framework[2] requires Minerals Planning Authorities (MPAs) to plan for a steady and adequate supply of aggregates by:

- preparing an annual Local Aggregate Assessment (LAA) "*based on a rolling average of 10 years' sales data and other relevant local information, and an assessment of all supply options (including marine dredged, secondary and recycled sources)*",
- "*participating in the operation of an Aggregate Working Party and taking the advice of that Party into account when preparing their Local Aggregate Assessment*",
- "*taking account of any published National and Sub National Guidelines on future provision which should be used as a guideline when planning for the future demand for and supply of aggregates*",
- "*using landbanks of aggregate minerals reserves principally as an indicator of the security of aggregate minerals supply…*", and
- "*maintaining landbanks of at least 7 years for sand and gravel and at least 10 years for crushed rock*".

2.2. The LAA is an assessment of the demand for and supply of aggregates in the county. Its prime purpose is to assist Worcestershire County Council (in its role as Mineral Planning Authority) in its efforts to provide for the steady and adequate supply of local aggregates, where reasonable and practicable to do so. It will inform the development and monitoring of minerals planning policy in the county and will be a material consideration in the determination of planning applications. This is the first LAA which uses data covering the period since the adoption of the Minerals Local Plan (2018-2036) (MLP) in July 2022.

2.3. A draft of this Local Aggregates Assessment was sent to the West Midlands, East Midlands, South West and South Wales Aggregate Working Parties for consultation in November 2022, and their comments have been taken in to account in the final report (see Appendix 1: Consultation with Aggregate Working Parties).

[2] Ministry for Housing, Communities and Local Government (September 2023) *National Planning Policy Framework*, paragraph 213

Approach

2.4. A Local Aggregate Assessment is an annual assessment of the demand for and supply of aggregates in a mineral planning authority's area[3]. The LAA serves a number of functions, principally:

- Monitoring aggregates provision and likely future demand;
- Identifying a LAA figure for calculation of landbanks; and
- Supporting evidence for preparation or review of Minerals Local Plans.[4]

2.5. Section 3 of this LAA takes account of the contribution that substitute or secondary and recycled materials and minerals waste make to overall supply of materials.[5]

2.6. The LAA then goes on to consider the supply of primary minerals. The starting point for setting a production guideline in the LAA is to estimate demand on the basis of **a rolling average of 10 years sales data** (the 10-year average, see sections 4 and 5) and then to consider other relevant local information and an assessment of supply options. This is based on the demand and supply indicators agreed by West Midlands Aggregate Working Party[6] as set out in Appendix 2:

- **Imports and exports of primary aggregates** to and from Worcestershire (see section 6)
- **Demand indicators** (see section 7)
  - **Total consumption** of aggregates in Worcestershire including from imports and indigenous supply.
  - **3-year sales average** to give an indication of the most recent trend in demand
  - **Sub-regional apportionment** derived from any national and sub national guidelines for aggregate provision.
  - **Anticipated levels of demand**
    - **Housing**
    - **Infrastructure**
    - **Employment**
- **Ability to Supply** (see section 8)
  - **Extant sites and permitted reserves**
  - **Site allocations**
  - **Pre application discussions**

2.7. Section 9 considers the conclusions drawn about each of these factors and uses this information to establish the annual production guidelines for sand and gravel and for crushed rock.

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[3] Minerals - GOV.UK (www.gov.uk)
[4] A guide to the production and use of local aggregate assessments (planningofficers.org.uk)
[5] Ministry of Housing Communities and Local Government (September 2023) *National Planning Policy Framework*, paragraph 210(b)
[6] Indicators to be used in LAAs (some may be dependent on availability/quality of data) as agreed by West Midlands Aggregate Working Party, October 2021.

Next steps

2.8. The Local Aggregate Assessment will be updated annually in consultation with the West Midlands Aggregate Working Party (WM AWP) and other AWPs as required. It will be published by the Council on our website at www.worcestershire.gov.uk/laa, and will be taken into account in Worcestershire County Council's Authority Monitoring Report (AMR) which will be published at www.worcestershire.gov.uk/amr. If you would like to be notified when new Local Aggregate Assessments and/or Authority Monitoring Report AMRs are published please contact PlanningDatabase@worcestershire.gov.uk providing your contact details[7].

[7] See http://www.worcestershire.gov.uk/info/20014/planning/1156/get_involved_in_planning

3. Substitute, secondary and recycled aggregates in Worcestershire

3.1. National policy states that, so far as practicable, planning authorities should "take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials".[8]

Substitute materials

3.2. It may be possible to reduce the need for primary aggregates through the use of substitute materials in construction. However, the use of substitutes will vary depending on individual development proposals. Their use is likely to be more strongly influenced by sustainable design and construction policies in the City, Borough and District Councils' Local Plans rather than through minerals planning policies.

3.3. There is no data available to indicate the level of contribution made by substitute materials in Worcestershire, but if use of substitutes were to increase and lead to a reduction in demand for primary materials, this will be reflected in the level of aggregate sales recorded.

Secondary aggregates

3.4. Secondary aggregates is a term often used to describe mineral that is produced as a by-product of other mining or quarrying activities or as a by-product of an industrial process.

3.5. There was one industrial process in Worcestershire in 2022 which was known to produce material suitable for processing into secondary aggregates: an Energy from Waste Plant ‘EnviRecover’ commenced operation in 2017 at Hartlebury, near Kidderminster. This plant produces approximately 40,000 tonnes per annum of Incinerator Bottom Ash (IBA) which is capable of being used as secondary aggregate, although further processing is required to enable this.

3.6. An Incinerator Bottom Ash Processing and Recovery Facility at Hill and Moor Landfill Site commenced operation in 2017, which focused on the removal of metals from the IBA for recycling and, subject to market demand, the re-use of secondary aggregate in the construction industry. In 2022 permission was granted to increase the throughput of the IBA processing operation at this site from 50,000 tonnes per year to 100,000 tonnes per year. This was to enable greater metal recovery (which can be recycled) and to provide the opportunity for more secondary aggregate to be used in the construction industry. In addition the permission included ‘aggregates blending’ to allow the importation of up to 40,000 tonnes per year of non-IBA aggregate to be blended with 40,000 tonnes per year of

[8] Ministry of Housing Communities and Local Government (September 2023) *National Planning Policy Framework*, paragraph 210(b)

secondary aggregate (recycled IBA - at a 50:50 ratio) to produce the MOT Type 1 specification material[9]. The imported aggregate would most likely be primary but could include recycled aggregate material such as crushed brick. The process of obtaining End of Waste Criteria to use the recovered IBA in block manufacture has also commenced. This facility is tied to the life of the Hill and Moor Landfill Site.

Recycled aggregates

3.7. Recycled aggregates arise from several sources, notably construction and demolition waste (C&D waste) such as the demolition of buildings, asphalt planings from road resurfacing, recycled glass, recycled tyres, and railway track ballast. "Recycling" aggregates involves the processing of waste materials to remove unwanted or inappropriate material such as fines, wood, plastic and metal. It will usually include crushing and screening. The recycled aggregate is then re-used, usually for a less demanding application.

3.8. The supply of recycled materials will depend on the county's capacity to process these materials. The Waste Core Strategy[10] sets targets for capacity at static plant, but due to data limitations it is not possible to monitor the role of mobile plant.

3.9. There are no reliable assessments of C&D arisings. The method used to establish projections in the Waste Core Strategy assumed that development would initially be concentrated on previously developed (brownfield) land which would generate considerable volumes of C&D waste, and that over time more new development would take place on greenfield sites resulting in the amount of C&D waste decreasing. The projected annual arisings of C&D waste in Worcestershire based on this approach are set out in Table 1. A guidance note was prepared by representatives from the National Waste Technical Advisory Board Chairs and Aggregate Working Party Chairs in May 2022 outlining various options available for the collection and collation of data to estimate arisings and sales of recycled aggregates and will be taken into account when reviewing the Waste Core Strategy. The methods detailed in this note are for guidance only, and there is no set approach for making estimates about waste arisings or projecting waste growth for C&D waste set nationally.

Table 1. Projected Annual Arisings of Construction and Demolition Waste (Worcestershire Waste Core Strategy)

	2010	2015	2020	2025	2030
Projected annual arisings of C&D waste	510,555	419,520	419,520	419,520	419,520

[9] The MOT Type 1 material is granular subbase material used to construct the base of roads, driveways, and hard standing areas. It contains a mix of angular aggregate sized stone from 40 millimetres down to dust.

[10] The Waste Core Strategy for Worcestershire was adopted in November 2012. The relevant documents are available to view on www.worcestershire.gov.uk/wcs.

3.10. The Waste Core Strategy makes provision for at least 25% of the capacity to manage this waste to be met from static sites. Data is limited in this regard, however estimates suggest that static facilities in Worcestershire, received approximately 139,000 tonnes of inert waste for treatment in 2022 across 10 sites, with a further 122,000 tonnes received for transfer across 22 sites.[11] It is not currently possible to assess the proportion of this which was subsequently sold or used as recycled aggregate.

3.11. Mobile processing and re-use on site is common at construction sites across the county, although no data is available about the volume processed by mobile plant.

3.12. Worcestershire does not have any rail depots for the import or export of minerals (including secondary and recycled materials). Water transportation takes place on the River Severn, but this is limited to moving "as-dug" primary aggregates from one site in Worcestershire to processing plant at another. The wharves at these sites therefore do not currently enable imports or exports of minerals. It is therefore concluded that all imports and exports currently take place by road transport.

Potential to increase contribution from secondary and recycled materials

3.13. Despite the current lack of information on the level of use of secondary and recycled materials locally, these are estimated to account for 28% of the total market nationally.[12] It has been reported that recycling C&D waste nationally increased from 92.2% in 2010 to 93.8% in 2018.[13] The quantity of C&D waste generated was also 14% higher in 2018 than 2010, meaning it has the potential to play a greater role in aggregate provision.[14] We have no evidence to indicate whether the proportions in Worcestershire are likely to vary from the national average.

3.14. The Mineral Products Association's evidence to the examination in public of the Staffordshire Minerals Local Plan in 2016 stated that:

"*secondary sources benefit from significant fiscal advantages over primary materials in the form of exemptions from the Aggregates Levy and avoidance of the Landfill Tax. As such, they will continue to be much cheaper than primary materials and thus favoured where specifications can accommodate them. Moreover, the [Mineral Products Association]'s members invariably offer a range of products including primary and*

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[11] Environment Agency Waste Data Interrogator 2022, interrogated for treatment and transfer facilities for inert waste received in Worcestershire. This figure is unable to be filtered to only include C&D waste.

[12] Mineral Products Association (2021) *Profile of the UK Mineral Products Industry 2020*, page 23, https://mineralproducts.org/MPA/media/root/Publications/2021/Profile_of_the_UK_Mineral_Products_Industry_2020_Spread.pdf

[13] Progress report on recycling and recovery targets for England 2020 - GOV.UK (www.gov.uk)

[14] Progress report on recycling and recovery targets for England 2020 - GOV.UK (www.gov.uk)

secondary materials to customers so the [minerals planning authority] can have the assurance that the industry is not needlessly extracting primary materials when secondary materials will do the job just as well.

Arisings of secondary materials will continue to rise and fall with economic conditions in the same way that demand for primary materials varies. Therefore, the two types of material will parallel each other and we expect the level of use of recycled and secondaries to remain broadly at the current level of 28 - 29% of total consumption. Given this any increase in primary mineral extraction activity will not be at the expense of secondary usage." [15]

3.15. The Minerals Local Plan and Waste Core Strategy give policy encouragement to increasing the use of secondary and recycled materials. However, the lack of data makes this difficult to monitor at the local level, and the evidence above from the Minerals Products Association indicates that this Local Aggregates Assessment should not rely on any significant alterations to the proportion of supply.

3.16. On this basis, this LAA assumes that the contribution of substitute, secondary and recycled materials is already accounted for prior to considering the sales figures for primary aggregates.

Summary

Summary: Substitute, secondary and recycled aggregates

Substitute, secondary and recycled aggregates are likely to play an important role in the supply of materials, estimated at approximately 28% of the total aggregate market.

The permitted capacity for processing incinerator bottom ash to create secondary aggregate in Worcestershire doubled in 2022.

Static facilities in Worcestershire received approximately 139,000 tonnes of inert waste for treatment in 2022, with a further 122,000 tonnes received for transfer, however there is limited data available to assess the contribution of on-site recycling made by mobile plant.

The LAA will assume that the contribution of substitute, secondary and recycled materials is already accounted for prior to considering the sales figures for primary aggregates.

[15] Mineral Products Association's written statement for day 1 of the Staffordshire Minerals Local Plan examination in public. Response to question 3 in document WS.05.

4. Primary Aggregates: Sand and Gravel Baseline

4.1. There are two distinct types of sand and gravel deposits in Worcestershire:

- Bedrock deposits: solid sands of the Kidderminster Formation and Wildmoor Sandstone Formation
- Superficial deposits: river terrace deposits of the rivers Severn and Avon and glacial deposits found in association with boulder clay.

4.2. As the qualities and properties of these deposits vary, the sand and gravel resources in Worcestershire are capable of supplying the markets for various types of sands (sands for asphalt, building or mortar sands, and concrete or sharp sands).

4.3. Worcestershire's solid sands are easily crushed to produce sand. Building and mortar sands are the primary market for quarries working the Wildmoor Sandstone Formation.[16] In the Kidderminster Formation, the sand grains are coarse- to fine-grade, and pebbles and cobbles can also be found,[17] meaning that there is potential for sand and gravel working in this Formation to provide materials to the concrete market, as well as the building sand and mortar markets.

4.4. Terrace deposits are washed and separated into different sizes of sands and gravels to supply different markets, with the majority of material being sold as concreting sand (sharp sand) and concrete aggregate (gravel, and gravel/sand mixes), but with some being sold as building or mortar sands and asphalting sand.[18]

4.5. Due to the overlap in their potential uses, and to facilitate the flexibility of market supply from each deposit, the solid sands and the river terrace and glacial deposits will be considered collectively under the term "sand and gravel" in the rest of this report.[19]

10-year sales average

4.6. The starting point for setting a production guideline for sand and gravel in the LAA is to estimate demand on the basis of a rolling average of 10 years sales data (the 10-year average) before considering other relevant local information. The 10-year sales average is designed to provide a

[16] Based on information supplied by mineral operators in response to West Midlands Aggregate Working Party's Aggregates Surveys.
[17] British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints*.
[18] Based on information supplied by mineral operators in response to West Midlands Aggregate Working Party's Aggregates Surveys.
[19] For further information about the nature, location and potential significance of the deposits see background document *Analysis of Mineral Resources in Worcestershire* at www.worcestershire.gov.uk/mineralsbackground

representative baseline indication of demand by averaging out economic peaks and troughs.

Data

4.7. Table 2 and Figure 1 show the levels of sand and gravel sales in Worcestershire over the 10-year period from 2013 to 2022. Worcestershire's data was combined with Herefordshire in 2013 due to issues of commercial confidentiality[20]. Permission was given by the affected operator in Herefordshire to enable the data to be shown separately again from 2014.

4.8. The most recent data available is for 2022.

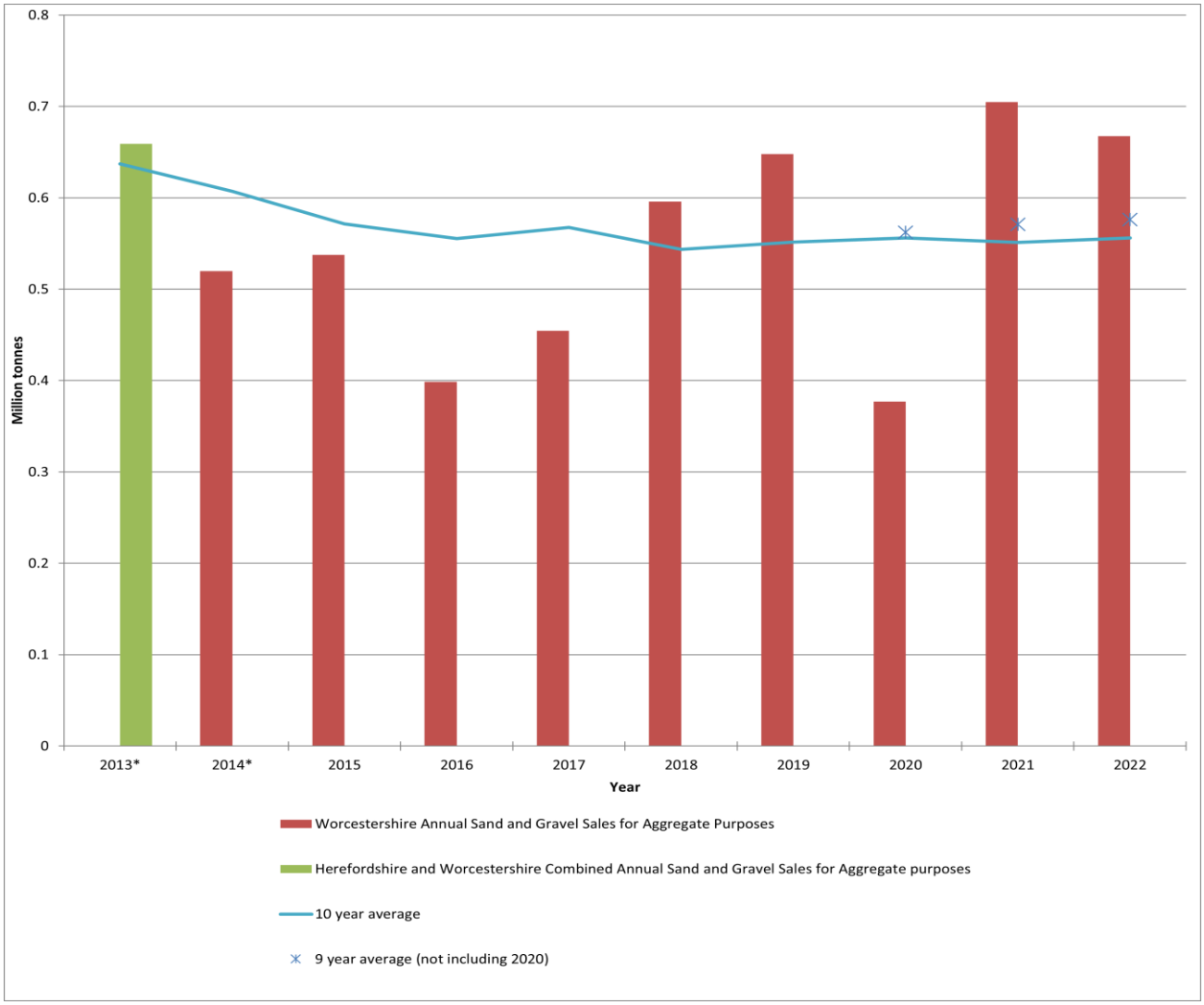
Table 2. Sand and gravel sales 2012 – 2021

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Sales from Worcestershire (million tonnes)	-	0.520*	0.538	0.399	0.455	0.596	0.648	0.377	0.705	0.668
Sales from Herefordshire & Worcestershire Combined (million tonnes)	0.659*	-	-	-	-	-	-	-	-	-
10-year sales average (million tonnes)	0.692	0.658	0.637	0.607	0.572	0.555	0.568	0.544	0.551	0.556
Number of active sites	**	**	4	3	3	3	3	3	4	4
Number of inactive sites	**	**	2	2	-	1	-	-	-	-
Permitted not yet commenced	**	**	1	1	-	-	-	-	-	3

Source: West Midlands Aggregate Working Party Annual Reports and West Midlands Aggregate Working Party Annual Monitoring Survey data. Data for sales in 2012-2013 combined for Herefordshire and Worcestershire due to confidentiality requirements.
* Includes estimated sales data for some sites.
** Data not available

[20] Long-standing confidentially arrangements agreed between the industry and government to protect operators' commercial interests. This means that sales data will not be released or published where there are fewer than 3 operational sites in an area unless express permission is given by the operators affected. From 2012 onwards there has been fewer than 3 operational sites in Herefordshire.

Figure 1. Sand and gravel annual and average sales 2013-2022



* Years marked * include estimated sales data for some sites.

4.9. In 2022, sales of sand and gravel from sites in Worcestershire were 0.668 million tonnes, a decrease from 0.705 million tonnes in 2021. Figures for 2020 and 2021 are both likely to have been impacted by the COVID-19 pandemic. In 2020 restrictions imposed at the start of the pandemic resulted in enforced shutdown of large sections of the UK economy. Sales of sand and gravel from Worcestershire in 2020 were 45% lower than in the previous year (2019) which was unaffected by the COVID-19 pandemic. However, sales in 2021 were higher than pre-pandemic levels indicating that the 2020 figures are likely to be a short-term fluctuation. It is possible that 2021 sales included some compensatory uplift before returning to pre-pandemic levels in 2022.

4.10. The 10-year average of sales from 2013-2022 (including combined data for 2013) is 0.556 million tonnes. The 10-year average fell over the period from 2013 to 2016, but since then has remained broadly stable with only a 3% variation during that time-period.

4.11. The sales of sand and gravel in Worcestershire in 2022 were 20% higher than the 10-year average of sales 2013-2022. They are also 16% higher than the 9-year average sales where 2020 is excluded.

Limitations

4.12. The rolling average of 10 years sales data provides the starting point for setting a production guideline for sand and gravel in the LAA. Figure 1 also includes a 9-year average which excludes the 2020 sales figures due to the impact of the covid pandemic. As there is only a small difference between these two averages (3.6%) and the 10-year average has remainder stable since 2016, the LAA will continue to use the 10-year average (including 2020 sales figures) as the starting point against which to consider other relevant local information.

4.13. However, the 10-year average has a number of other weaknesses that make sole reliance on it undesirable:

- Sales will vary depending on both supply and demand factors in the market, and basing a production guideline on this alone could risk following historical trends rather than meeting future demand or considering the county's ability to supply. For example, sand and gravel sales figures for 2009 were approximately 36% lower than for the previous 10 years. The pre-recession sales were reflected in the 10-year average up until 2017. Whilst an average over 10 years may balance out short-term peaks and troughs, it could also lead to setting a production guideline that reflects a different market situation, particularly where economic peaks and troughs were felt over multiple years, rather than looking at economic projections for forthcoming years.
- Sales figures for 2012 and 2013 incorporate combined data with Herefordshire which could skew the average.[21] This has an impact on the 10-year sales average up to and including 2022.
- Until July 2022 the County of Hereford and Worcester Minerals Local Plan (1997) was used to make decisions about planning applications for mineral development. It was beyond its expected implementation period, with a limited number of Preferred Areas and saved policies, which could have limited operator interest in bringing sites forward in Worcestershire during this time, thereby depressing the annual sales figure. Although the Worcestershire Minerals Local Plan (2018-2036) was adopted in July 2022, the likely impacts of a dated Mineral Local Plan up until that time will continue to have an impact on the 10-year sales average going forward.
- For 4 out of the last 5 years, the 10-year average was below annual sales (13%-22% lower) meaning that it could under-represent current market demand.

[21] If we were to discount the combined data for 2013, the average over the 9 remaining years between 2014-2022 is 0.545 million tonnes.

4.14. Therefore, whilst the 10-year average is considered to be the best starting point, this needs to be considered alongside other indicators of demand and supply.

Summary

Summary: 10 years sales average – sand and gravel

The 10-year average of sales from 2013-2022 is 0.556 million tonnes. This has remained broadly stable for the last 6 years.

For 2022 sales of sand and gravel from sites in Worcestershire were 20% higher than the 10-year sales average at 0.668 million tonnes.

5. Primary Aggregates: Crushed Rock Baseline

5.1. The bedrock geology in Worcestershire includes the following mineral deposits which are believed to be the only strata in the county that have been worked to produce crushed rock aggregates since 1947: [22]

- The Precambrian "Malverns Complex" and "Warren House Formation"
- The Silurian "Woolhope Limestone Formation"[23]
- The Ordovician "Lickey Quartzite Formation" and
- The Jurassic "Inferior Oolite Group".

5.2. Rocks of the Malverns Complex and Warren House Formation include rocks which have previously been worked as a source of aggregate suitable for use in road construction and maintenance, as well as for building stone.[24] Woolhope Limestone is often only suitable for production of constructional fill, although there may be areas where the formation comprises relatively clean, good-quality limestones suitable for aggregate use.[25] Lickey Quartzite may be suitable for uses which require high resistance to abrasion,[26] whereas Inferior Oolite limestone is used for low-quality aggregate purposes such as constructional fill (as well as for building stone).[27, 28]

5.3. The qualities and properties of these deposits vary, although each type of deposit may be capable of supplying various markets (such as roadstone, railway ballast, concrete aggregate, or other construction aggregates).

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[22] For further information about the nature, location and potential significance of the deposits see background document *Analysis of Mineral Resources in Worcestershire* at www.worcestershire.gov.uk/mineralsbackground

[23] Silurian "Aymestry Limestone Formation" deposits have also been worked in the past, but these are not considered to be a significant resource under the methodology set out in the background document *Analysis of Mineral Resources in Worcestershire* (available at www.worcestershire.gov.uk/mineralsbackground)

[24] British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints*.

[25] British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints*.

[26] British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints*.

[27] British Geological Survey and Office of the Deputy Prime Minister (2006) *Mineral Resource Information in Support of National, Regional and Local Planning: Gloucestershire (comprising Gloucestershire and South Gloucestershire)*.

[28] British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints*.

Due to the overlap in their potential uses, and to facilitate the flexibility of market supply from each deposit, these deposits will be considered collectively under the term “crushed rock” in the rest of this report.

10 year sales average

5.4. The starting point for setting a production guideline for crushed rock in the LAA is to estimate demand on the basis of a rolling average of 10 years sales data (the 10-year average) before considering other relevant local information.

5.5. Table 3 shows the levels of crushed rock sales in Worcestershire over the last 10 years (2013-2022). Worcestershire's last crushed rock site ceased working in 2010 and has since been restored.

Table 3. Crushed rock sales 2013 – 2022 (million tonnes)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Sales from Worcestershire	0	0	0	0	0	0	0	0	0	0
10-year sales average	0.036	0.036	0.026	0.014	0.007	0	0	0	0	0

Source: West Midlands Regional Aggregate Working Party Annual Reports.

5.6. In 2022, sales of crushed rock in Worcestershire were 0 tonnes.

5.7. As no crushed rock sales have been recorded in any of the last 10 years, the 10-year average of sales from 2013-2022 is 0 tonnes.

5.8. The lack of sales of crushed rock in Worcestershire in recent years should not be misconstrued as a lack of demand. It should therefore be considered alongside other indicators of demand and supply.

Summary

Summary: 10 years sales average – crushed rock

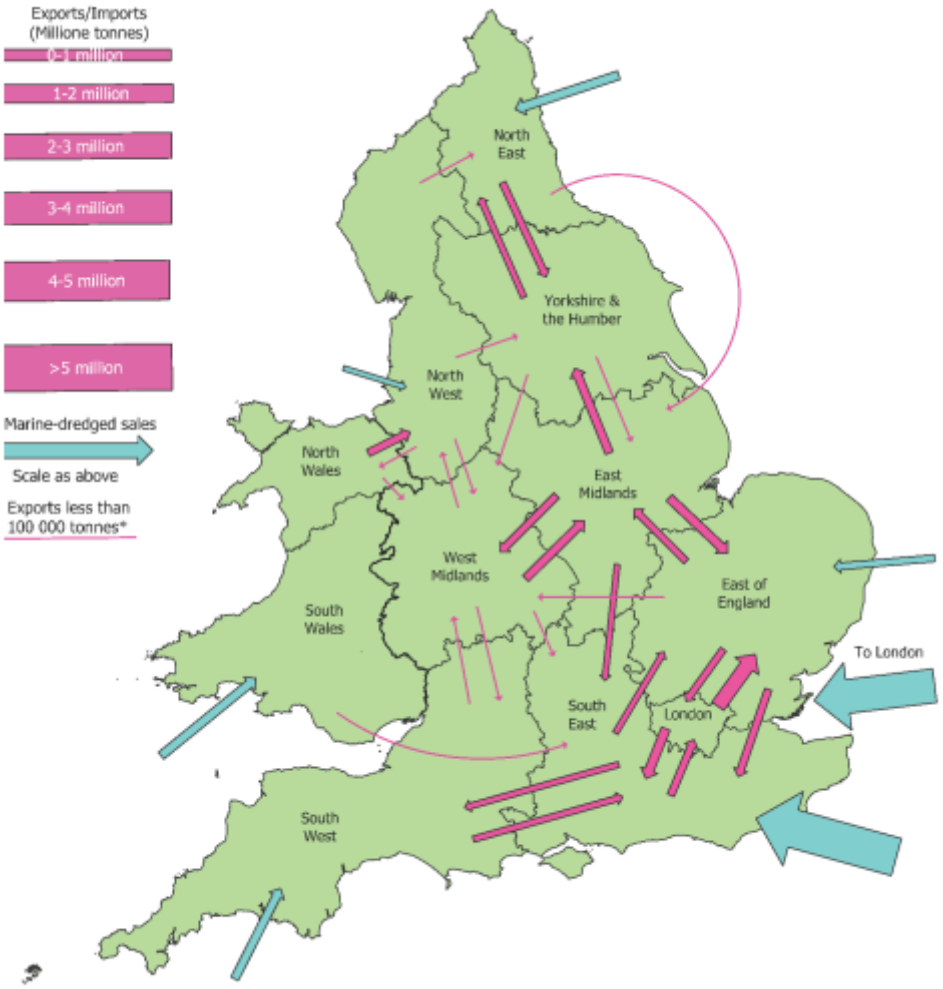
No crushed rock sales have been recorded in any of the last 10 years. The lack of sales of crushed rock in Worcestershire in recent years should not be misconstrued as a lack of demand. It should therefore be considered alongside other indicators of demand and supply.

6. Primary Aggregates: Imports and Exports

6.1. Sales figures alone only show the amount produced within the county, and cannot show whether this is broadly comparable to the scale of demand within Worcestershire. Understanding the scale of net imports and exports in the county is therefore important. Where there are net imports this would indicate that demand in the county is higher than the amount sold from sites in the county, and where there are net exports this would indicate that Worcestershire is producing more than the amount needed to meet its own needs and is therefore contributing to regional or national supply through the Managed Aggregate Supply System.

6.2. The only source of information about the flows of imports and exports of primary aggregates is the *Aggregate minerals survey for England and Wales*. This survey is undertaken by government every 4 or 5 years and one aspect that it considers is the movement of materials. It sets out information relating to the inter-regional flow of aggregates. The pattern of movements of sand and gravel is illustrated in Figure 2, and the pattern of movements of crushed rock is illustrated in Figure 3.

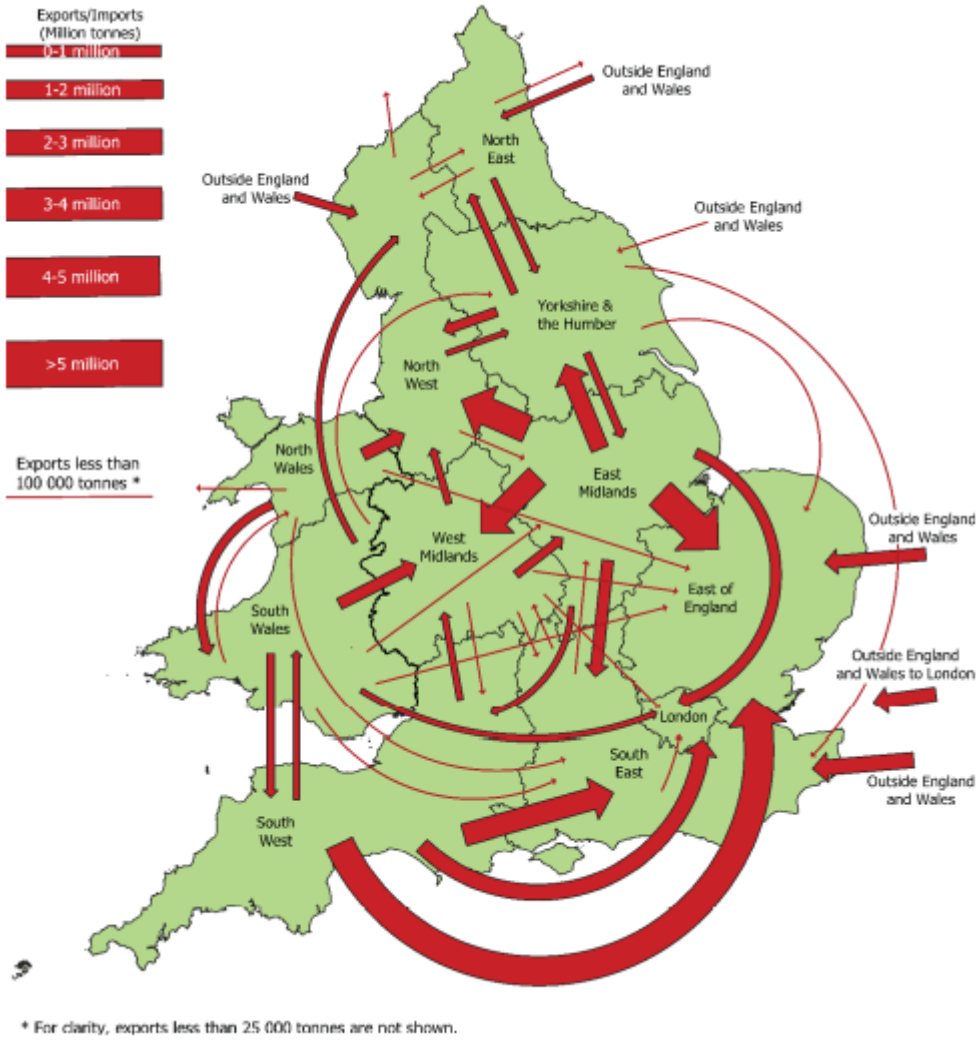
Figure 2. Sand and gravel inter-regional flows, 2019



* For clarity, exports less than 25 000 tonnes are not shown.

Source: "Collation of the results of the 2019 aggregate minerals survey for England and Wales" Ministry of Housing, Communities and Local Government (2021).

Figure 3. Crushed rock inter-regional flows, 2019



Source: "Collation of the results of the 2019 aggregate minerals survey for England and Wales" Ministry of Housing, Communities and Local Government (2021).

6.3. The data which is available for Worcestershire in the *Aggregate minerals survey for England and Wales* for 2009, 2014 and 2019 is presented in Table 4, Table 5, and Table 6. This is the best available data for understanding both the likely scale and balance of imports and exports and the total consumption of primary aggregates in Worcestershire (see section 7). However, discussion with the authors of the document revealed that the information in the 2014 survey did not represent a complete dataset from all mineral operators,[29] and we understand from personal communications with officers at other mineral planning authorities that this

[29] Email correspondence with Mr T Bide at the British Geological Survey (7th August 2017) revealed that for 2009 responses were only received for two quarries in Worcestershire, and in 2014 for only 1 quarry.

may also be the case for the 2019 dataset. It is therefore considered that caution must be applied in relying on this data[30].

6.4. Subject to the caveats outlined above, the data presented in Table 4 to Table 6 below indicate that Worcestershire was a net exporter of sand and gravel in all years, and a net importer of crushed rock in all years. Data is presented for sales of primary (land-won) sand and gravel from Worcestershire, alongside the level of imports of land-won sand and gravel, marine sand and gravel, and crushed rock into Worcestershire. As an inland county, Worcestershire does not produce marine sand and gravel. No sales data is presented for crushed rock as there were no sales recorded from Worcestershire during this period in the Aggregate Minerals Survey.[31]

Table 4. Exports: Sales of land-won sand and gravel from Worcestershire by principal destination sub-region

Year	Tonnes sold within the following destination: Worcestershire	Tonnes sold within the following destination: West Midlands	Tonnes sold within the following destination: Elsewhere	Total
2009	114,000 (52%)	59,000 (27%)	45,000 (21%)	218,000
2014	51,000 (22%)	133,000 (57%)	47,000 (21%)	231,000
2019	278,000 (44%)	269,000 (41%)	92,000 (14%)	648,000

Source: "*Collation of the results of the 2009 aggregate minerals survey for England and Wales*" Communities and Local Government (October 2011) table 9f, "Collation of the results of the 2014 aggregate minerals survey for England and Wales" Communities and Local Government (March 2016) table 9f, and "Collation of the results of the 2019 aggregate minerals survey for England and Wales" Ministry of Housing, Communities and Local Government (2021) table 9f.

Table 5. Imports of primary aggregates into Worcestershire

Year	Tonnes of land-won sand and gravel	Tonnes of marine sand and gravel	Tonnes of crushed rock
2009	45,000	13,000	192,000
2014	146,000	2,000	540,000
2019	103,000	2,000	733,000

Source: "*Collation of the results of the 2009 aggregate minerals survey for England and Wales*" Communities and Local Government (October 2011) table 10, "Collation of the results of the 2014 aggregate minerals survey for England and Wales" Communities and Local Government (March 2016) table 10 and "Collation of the results of the 2019 aggregate minerals survey for England and Wales" Ministry of Housing, Communities and Local Government (2021) table 10.

[30] See Table 7 and Table 8 below for more details about the difference between the data in the *Aggregate minerals survey for England and Wales* and AWP sales data.

[31] No sales of crushed rock were recorded in "Collation of the results of the 2009 aggregate minerals survey for England and Wales" Communities and Local Government (October 2011) table 9f. A crushed rock site in Worcestershire was approaching the end of its working life in 2009, but it is unclear whether this table is accurate or whether some of the combined sales figure with Herefordshire for 2009 (0.2 million tonnes) reported in previous iterations of the Local Aggregate Assessment may have been attributable to Worcestershire.

Table 6. Balance of primary aggregate exports and imports in Worcestershire

Year	Balance of sand and gravel imports / exports (land won and marine)	Balance of crushed rock imports / exports	Balance of all primary aggregate imports / exports
2009	Net exporter: 46,000 tonnes	Net importer: 192,000 tonnes	Net importer: 146,000 tonnes
2014	Net exporter: 32,000 tonnes	Net importer, 540,000 tonnes	Net importer: 508,000 tonnes
2019	Net exporter: 256,000 tonnes	Net importer: 733,000 tonnes	Net importer: 477,000 tonnes

Source: Based on data in "*Collation of the results of the 2009 aggregate minerals survey for England and Wales*" Communities and Local Government (October 2011), "Collation of the results of the 2014 aggregate minerals survey for England and Wales" Communities and Local Government (March 2016) and "Collation of the results of the 2019 aggregate minerals survey for England and Wales" Ministry of Housing, Communities and Local Government (2021)

6.5. The tables show that in 2019 Worcestershire was a net exporter of sand and gravel and a net importer of crushed rock. Overall, 44% of sand and gravel produced in Worcestershire is used within the county with 85% used within the West Midlands. In 2019 sales of sand and gravel from Worcestershire accounted for 10% of total supply from the West Midlands AWP area. This was the second largest contribution from a West Midlands Minerals Planning Authority, the largest being Staffordshire at 78%.

6.6. Worcestershire does not have any rail depots for the import or export of minerals. Water transportation takes place on the River Severn, but this is limited to moving "as-dug" material from one site in Worcestershire to processing plant at another. The wharves at these sites therefore do not currently enable imports or exports of minerals. It is therefore concluded that all imports and exports currently take place by road transport.

Summary

Summary: Imports and Exports

In 2019 Worcestershire was a net exporter of sand and gravel but, with no indigenous production of crushed rock, overall Worcestershire was a net importer of primary aggregates. 44% of sand and gravel produced in Worcestershire was used within the county, with 85% used within the West Midlands.

7. Primary Aggregates: Demand Indicators

Total consumption

7.1. The amount of primary aggregate consumed within Worcestershire each year can provide useful context about the demand for resources within the county, but does not fully consider the role of supply from Worcestershire in the regional market.

7.2. Total consumption for the county can be estimated based on data which is available for Worcestershire in the *Aggregate minerals survey for England and Wales* for 2009, 2014 and 2019. However, as detailed above, discussion with the authors of the document revealed that the information in the 2014 survey did not represent a complete dataset from all mineral operators,[32] and we understand from personal communications with officers at other mineral planning authorities that this may also be the case for the 2019 dataset. It is therefore considered that caution must be applied in relying on this data. Table 7 and Table 8 below therefore show this information alongside more robust sales figures recorded by AWP for context.

Table 7. Sales and consumption of sand and gravel in Worcestershire (million tonnes)

Sand and Gravel: Sales/Consumption	2009	2014	2019
Total sales from sites in Worcestershire: AWP sales data	0.524	0.519	0.648
Total sales from sites in Worcestershire: Collation of the results of the aggregate minerals survey for England and Wales	0.218 (↓58% lower than AWP data)	0.231 (↓55% lower than AWP data)	0.648 (both reports use the same survey data)
Total consumption in Worcestershire from any source: Collation of the results of the aggregate minerals survey for England and Wales	0.172	0.199	0.392
Net importer/exporter: Collation of the results of the aggregate minerals survey for England and Wales	Net exporter: 0.460	Net exporter: 0.032	Net exporter: 0.256

Source: Based on data in "*Collation of the results of the 2009 aggregate minerals survey for England and Wales*" Communities and Local Government (October 2011), "Collation of the results of the 2014 aggregate minerals survey for England and Wales" Communities and Local Government (March 2016) and "Collation of the results of the 2019 aggregate minerals survey for England and Wales" Ministry of Housing, Communities and Local Government (2021)

[32] Email correspondence with Mr T Bide at the British Geological Survey (7th August 2017) revealed that for 2009 responses were only received for two quarries in Worcestershire, and in 2014 for only 1 quarry.

Table 8. Sales and consumption of crushed rock in Worcestershire (million tonnes)

Crushed rock: Sales/Consumption	2009	2014	2019
Total sales from sites in Worcestershire: AWP sales data	0.2	0	0
Total sales from sites in Worcestershire: Collation of the results of the aggregate minerals survey for England and Wales	0 (lower than AWP data)	0	0
Total consumption in Worcestershire from any source: Collation of the results of the aggregate minerals survey for England and Wales	0.192	0.54	0.733
Net importer/exporter: Collation of the results of the aggregate minerals survey for England and Wales	Net importer: 0.192	Net importer: 0.54	Net importer: 0.733

Source: Based on data in "*Collation of the results of the 2009 aggregate minerals survey for England and Wales*" Communities and Local Government (October 2011), "Collation of the results of the 2014 aggregate minerals survey for England and Wales" Communities and Local Government (March 2016) and "Collation of the results of the 2019 aggregate minerals survey for England and Wales" Ministry of Housing, Communities and Local Government (2021)

7.3. Data on total consumption is not available on an annual basis, and there are significant concerns about the reliability of this data, with the data reported in the 2009 and 2014 Collation of the results of the 2014 aggregate minerals survey for England and Wales being 55-58% lower than that reported by AWP (see Table 7). This means data cannot be used to identify trends. However, the 2019 dataset for both the Collation of the results of the 2014 aggregate minerals survey for England and Wales and AWP Report are the same and and could be used to provide an indication of the overall scale of demand for primary aggregates within Worcestershire at a fixed point.

7.4. Based on this data, in 2019 the total consumption of sand and gravel in Worcestershire was estimated to be 0.392 million tonnes, this is equivalent to 59% of sand and gravel supply from the County. Crushed rock consumption was estimated to be 0.733 million tonnes, with no indigenous supply.

Summary

Summary: Total consumption

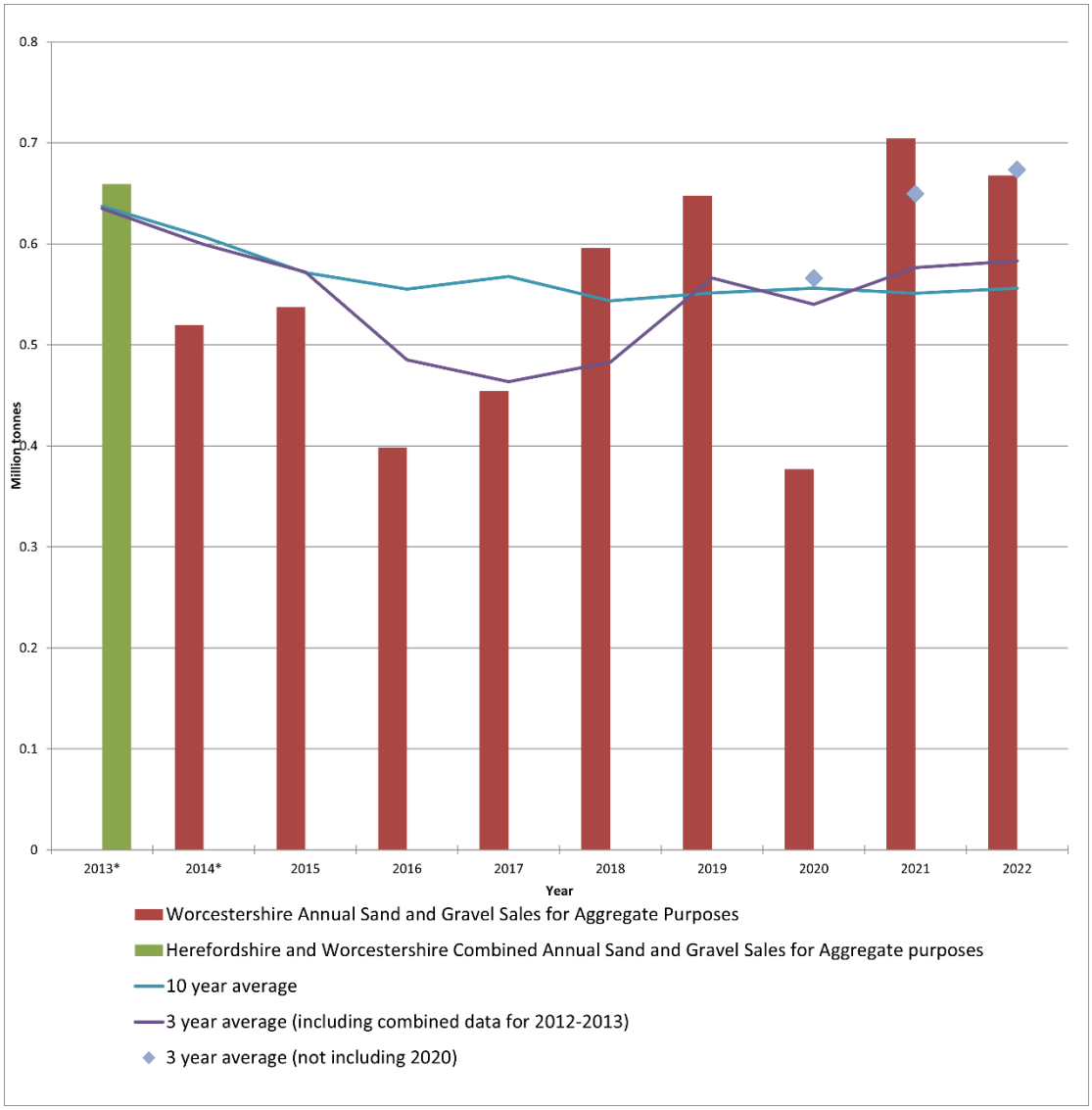
In 2019 consumption of sand and gravel in Worcestershire was estimated to be 0.392 million tonnes, this is equivalent to 59% of sand and gravel supply from the County.

Crushed rock consumption was estimated to be 0.733 million tonnes, with no indigenous supply.

3-year sales average

7.5. The LAA also considers an average of the last 3 years sales to give an indication of the most recent trends in demand.

7.6. For sand and gravel, the 3-year average from 2020-2022 is 0.583 million tonnes. This is 5% higher than the 10-year average, but is 12.7% lower than the 2022 sales figure. Where 2020 sales figures are excluded (due to the impacts of the pandemic) the 3-year sales average[33] for 2019 - 2022 is broadly comparable to the 2022 sales figures.



7.7. For crushed rock, the 3-year average from 2020-2022 is 0 tonnes. As there were no sites in Worcestershire producing crushed rock in the last 3 years, no trends in demand can be derived from sales data over this period.

[33] Mean average of 2019, 2021 and 2022 sales.

Summary

Summary: 3-year sales average

The 3-year sales average for sand and gravel is 5% higher than the 10-year average but is 12.7% lower than the 2022 sales figure. Where 2020 sales figures are excluded (due to the impacts of the pandemic) the 3-year sales average[34] for 2019-2022 is broadly comparable to the 2022 sales figure.

For crushed rock, the 3-year average from 2020-2022 is 0 tonnes.

Sub-regional apportionment

7.8. A further indicator to be taken into account is the sub-regional apportionment derived from the *National and regional guidelines for aggregates provision in England*.[35] These guidelines 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 Worcestershire this was 0.871 million tonnes of sand and gravel, and 0.163 million tonnes of crushed rock. No sub-regional apportionment based on the 2005-2020 Guidelines was agreed, and no further National and Sub National Guidelines have been published by government.

7.9. The sub-regional apportionment for sand and gravel of 0.871 million tonnes was 30% higher than the 2022 sales figure, and is 57% higher than the 10-year average. This level of production has not been achieved in Worcestershire since 2003.

7.10. For crushed rock, the level of production required to meet the sub-regional apportionment figure of 0.163 million tonnes has not been achieved in Worcestershire since 2002.

7.11. In the Inspector's Report on the partial review of the Northamptonshire Minerals and Waste Local Plan,[36] the Inspector stated “as they (*the national guidelines*) were based on production before the recession and within a different policy context, it would not be prudent to accord them very significant weight.” However, discussion during the examination hearing sessions for Worcestershire’s Minerals Local Plan in November-

[34] Mean average of 2019, 2021 and 2022 sales.
[35] Department for Communities and Local Government https://www.gov.uk/government/publications/national-and-regional-guidelines-for-aggregates-provision-in-england-2005-to-2020
[36] The Planning Inspectorate (August 2014) *Report on the Examination into the Northamptonshire Minerals and Waste Local Plan (Northamptonshire Minerals & Waste Development Framework Partial Review)* http://www3.northamptonshire.gov.uk/councilservices/environment-and-planning/planning/planning-policy/minerals-and-waste-planning-policy/documents/PDF%20Documents/ReportToNorthamptonshireCountyCouncilV3.pdf

December 2020 highlighted that the lack of crushed rock production and therefore sales information in recent years means that the sub-regional apportionment for crushed rock does provide some indication of the scale of potential demand.

7.12. This suggests that it would not be appropriate to increase the production guideline for either sand and gravel or crushed rock in this LAA above the 10-year average solely on the basis of the *National and regional guidelines* or the sub-regional apportionment. However, this will be considered together with other indicators in **Setting the production guideline** below.

Summary

Summary: Sub-regional apportionment

The sub-regional apportionment for Worcestershire was 0.871 million tonnes of sand and gravel, and 0.163 million tonnes of crushed rock. For sand and gravel this is 30% higher than the 2022 sales and is 57% higher than the 10-year average. This level of production has not been achieved in Worcestershire since 2003. There has been no crushed rock production in Worcestershire since 2009.

Anticipated levels of development

7.13. Considering levels of planned development could provide an indication of whether demand for aggregates is likely to significantly increase or decrease, warranting an adjustment in the production guidelines.

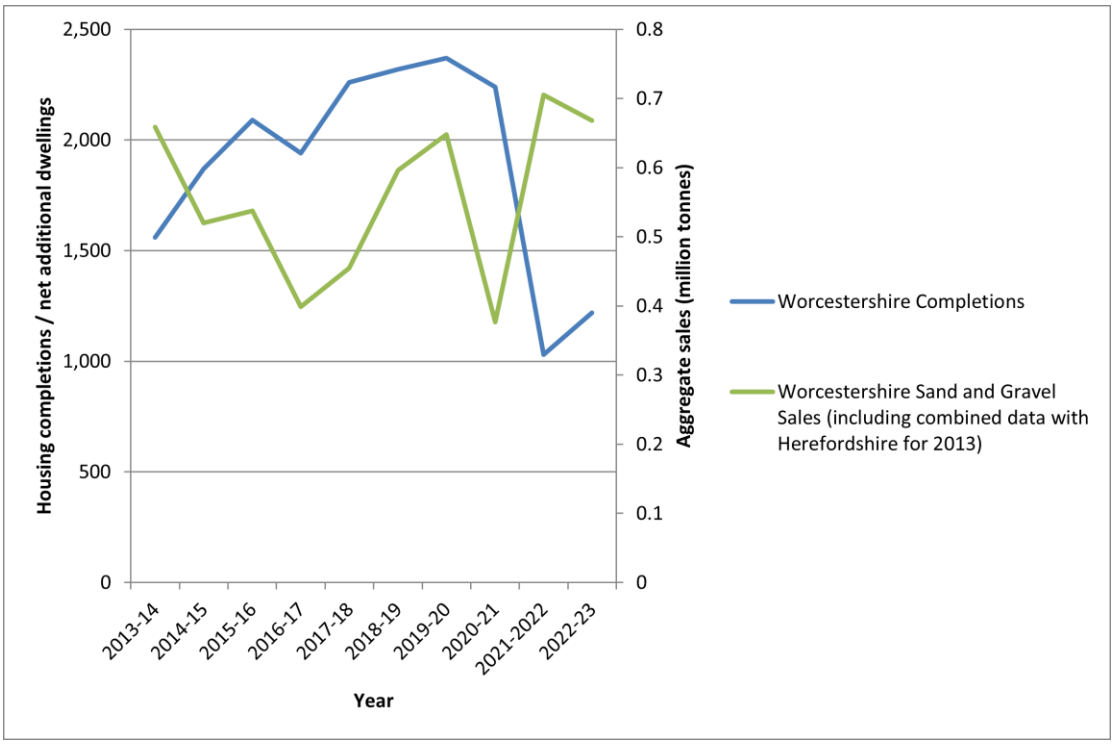
Housing development

7.14. A steady and adequate supply of aggregates is crucial to enabling the level of planned housing development to be delivered in the county. To understand whether future demand for aggregates for housing is likely to be comparable to, or significantly lower or higher than, historic levels of demand, trends in housing completions are compared below to target levels set in adopted Local Plans and as calculated using the Standard Methodology from Government released in December 2020.

Historic levels of demand

7.15. Figure 4 shows aggregate sales against housing completions in Worcestershire over the last 10 years.

Figure 4. Aggregate sales versus housing completions[37]



7.16. Figure 4 shows that the level of housing completions has varied annually over the last 10 years (between 1,030 and 2,370), with an average of 1,734 completions per year[38]. The highest completions were in the 3 years prior to March 2021, despite the impact of the restrictions introduced in response to the COVID-19 pandemic in Spring 2020. The number of completions in the year from April 2021 – March 2022 was 54% lower than the previous year. Although completions from April 2022 – March 2023 are slightly higher than the previous year they are still 42% lower than the average over the last 10 years.

7.17. There does not appear to be a close correlation between housing completions in Worcestershire and sand and gravel sales from Worcestershire.

7.18. Given that Worcestershire is a net exporter of sand and gravel it is important to consider wider trends. Figure 5 shows that housing completions in England [39] dropped steeply in Spring 2020 due to the

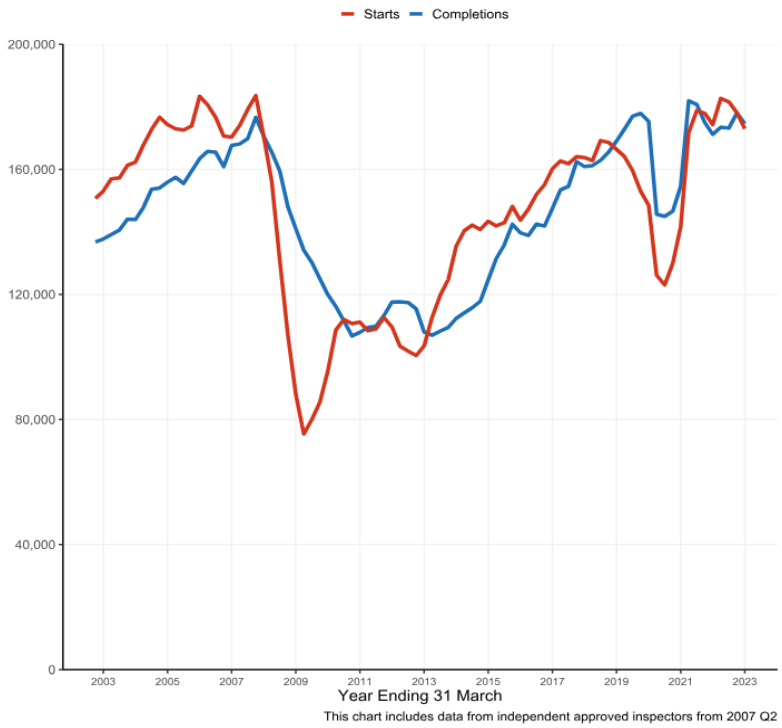
[37] Housing completions data based on Department for Communities and Local Government, statistical data set "Live tables on house building: new build dwellings" table 253 (permanent dwellings started and completed, by tenure and district). https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building..

[38] Department for Communities and Local Government, statistical data set "Live tables on house building: new build dwellings" table 253 (permanent dwellings started and completed, by tenure and district). https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building.

[39] Department for Levelling Up, Housing and Communities Housing supply: indicators of new supply, England: January to March 2023 Published June 2023

restrictions introduced in response to the COVID-19 pandemic. They recovered, peaking in the year ending June 2021 with the increase in net additional dwellings in England being 10% greater in 2021-22 than during the same period in 2020-21 however they have since fallen (to March 2023). This is a different picture to that seen in Worcestershire.

Figure 5. Trends in building control reported estimates of starts and completions, 12-month rolling totals (not seasonally adjusted) England 2002 to 2022



Source: Housing supply: indicators of new supply, England: January to March 2023

Approach

7.19. In the previous, LAA estimates of the typical aggregate demand per new home[40] were used to consider the likely aggregate demand for housing. However, due to the following limitations, this approach is no longer considered helpful:

- There does not appear to be a strong correlation between housing completions in Worcestershire and sand and gravel sales.
- The estimated aggregate demand per house does not distinguish between use of sand and gravel and crushed rock.

Housing supply: indicators of new supply, England

[40] The range used was that a typical new house uses 200 tonnes of aggregate, or up to 400 tonnes of aggregate when supporting infrastructure, such as access roads. The Mineral Products Association's "*Profile of the UK Mineral Products Industry - 2020 Edition*" (published in 2021) states that a "typical home" uses 12 tonnes of mortar and 200 tonnes of aggregate, https://www.mineralproducts.org/MPA/media/root/Publications/2021/Profile_of_the_UK_Mineral_Products_Industry_2021.pdf

- This approach does not include any indication of the likely level of demand for material used in maintaining or refurbishing existing housing stock.
- When compared to the aggregate minerals survey, estimated demand (based on 400 tonnes of aggregate per house) would exceed total estimated consumption of aggregates in Worcestershire in 2019.

7.20. Instead, this LAA considers the anticipated trajectory for new housing development in Worcestershire (based on the consideration of adopted and emerging local plans and the government's Standard Methodology) and compares it to past trends. It is not possible to consider projections for regional housing completions in the same way due to the review timescales and the lack of clarity about the areas where demand for sand and gravel will be met from Worcestershire.

Future projected demand

7.21. Adopted Local Plans in Worcestershire currently plan for 2,218 new homes per annum.[41] This is comparable to the scale of development achieved in Worcestershire in the 3 years prior to March 2021, but is 22% higher than the average annual completions over the last 10 years.

7.22. A number of Local Plans in Worcestershire are currently being reviewed. It is anticipated that these reviews will confirm the continued need for housing development in the county, plus associated infrastructure including roads and schools. Based on the government's Standard Methodology which will inform emerging Local Plans, it is anticipated that this will be in the region of 2047 houses per annum[42]. This is 15% higher than the average number of completions seen over the last 10 years.

7.23. Taking both of these considerations into account it is estimated that the scale of future housing development in Worcestershire will be approximately 2,047 to 2,218 houses per annum. In Worcestershire this level of housing supply was met in 2015-16 and exceed in the four years between 2017-18 and 2020-21. Over that period, sand and gravel sales averaged 0.556 million tonnes per annum (i.e. the same as the current 10-year average). This provides some confidence in the ability to supply the local housing market based on sales being equivalent to the 10-year sales average.

7.24. The aggregate minerals survey also provides useful context on this point (notwithstanding the caveats about its use outlined above). Table 9 shows the sand and gravel sales and balance of imports and exports in Worcestershire for 2019. It shows that in 2019 consumption of sand and gravel in Worcestershire was equivalent to 59% of sand and gravel supply

[41] Based on figures in South Worcestershire Development Plan (2016), Wyre Forest District Local Plan (2022), Bromsgrove District Plan (2017), and Borough of Redditch Local Plan No.4 (2017).
[42] 2047 homes per annum calculated using the Standard Methodology from Government released in December 2020.

from sites in Worcestershire, and at this time housing completions were above the current anticipated trajectory.

7.25. Although this looks at a single year and some caution must therefore be exercised, it provides a useful indicator that the levels of supply at this time were likely to be adequate to meet demand from the local housing market.

Table 9. Housing completions and sand and gravel sales in Worcestershire 2019

Housing completions (2019-2020)	2,320 (exceeding future anticipated annual delivery)
Sales of sand and gravel sales from Worcestershire	648,000 tonnes 44% sold within Worcestershire 41% sold within West Midlands 14% sold elsewhere
Imports of sand and gravel into Worcestershire	103,000 tonnes
Consumption of sand and gravel in Worcestershire based on indigenous supply and imports	381,000 tonnes Equivalent to 59% of sales of sand and gravel from Worcestershire.
Balance of sand and gravel imports / exports: Worcestershire	Net exporter: 256,000 tonnes

7.26. There is less certainty in relation to regional demand for aggregates for housing. However, the Mineral Products Association recently forecast 0.8% growth in construction output in the West Midlands for the period 2023-2027, of which private housing development is expected to be the main driver of growth.[43]

7.27. The same document reported that nationally "Construction activity slowed in the second half of 2022, as businesses were hampered by a faltering economy and elevated costs of energy. Sectors most closely linked with households have been most exposed, including new housing and private housing repair & maintenance (R&M). Consumer demand has been constrained by falling real incomes, while tricky market conditions – including the highest interest rates for 15 years – have prompted a sharp reduction in buyer enquiries and agreed sales in housing according to recent RICS surveys (RICS, 2023). The Construction Products Association forecasts a 6.8% decline in construction output in 2023, followed by a modest 0.3% fall in 2024[44]. This reflects weak expectations across most major sectors, particularly in housing and private housing repair, maintenance and improvement. In May 2023 the Mineral Production Association also said that "Mortar sales volumes, which are primarily linked to the early stages of new housing developments, saw a

[43] Regional_overview_of_construction_and_mineral_products_markets_in_GB_Spring_2023.pdf (mineralproducts.org)

[44] Construction Industry Forecasts - Autumn 2023 (constructionproducts.org.uk)

5.1% fall in the last 12 months."[45] This continued to drop by 8.7% in the following quarter.[46]

Summary

Summary: Anticipated levels of demand – housing development

Planned levels of annual housing provision in Worcestershire over the next 10 years are higher than the average annual completions over the last 10 years, but are comparable to the scale of development achieved in Worcestershire in 2015 and lower than that achieved in the 4 years prior to March 2021, when sand and gravel sales were comparable to the current the 10-year average. This provides some confidence in the ability to supply the local housing market with sand and gravel based on sales equivalent to the 10-year sales average.

It has not been possible to consider the impact of regional demand for sand and gravel for housing, but national forecasts by the minerals industry suggest either some contraction or low levels of growth in housing construction in the immediate future.

Crushed rock demand in relation to housing development is currently met through the importation of material from outside Worcestershire. The lack of sales of crushed rock from Worcestershire in recent years should not be misconstrued as a lack of demand.

Employment development

7.28. Data on employment land delivery is collated by Worcestershire's six Borough, District and City councils. However, this work is done and reviewed on different timescales across the county, and to varying levels of detail. Data about employment land completions is not available for Wyre Forest and is not available for South Worcestershire Districts prior to 2019-20. It is therefore not possible to use this information to identify trends in employment development or to consider the relationship between the scale of development and historic aggregates sales in Worcestershire.

7.29. In addition, although a total of 752ha of land is currently allocated for employment use across Worcestershire,[47] there is no published data about the employment allocations will have already been approved and implemented and those which remain. As such there is a lack of robust data available in Worcestershire regarding delivery trajectories and the relationship to aggregate supply.

[45] Construction struggles as demand for essential materials drops - MPA (mineralproducts.org)
[46] MPA Economic Market Briefing to West Midlands Aggregate Working Party November 2023.
[47] Made up of 640ha allocated in the South Worcestershire Development Plan, 55ha in the Redditch Local Plan, 29ha in the Wyre Forest Local Plan and 28ha in the Bromsgrove District Plan.

Summary

Summary: Anticipated levels of demand – employment development

There is a lack of robust data about this factor.

Infrastructure development

7.30. It is recognised that significant levels of infrastructure development are proposed in the Local Plans and Strategic Economic Plans in and around Worcestershire which will create some demand for aggregate minerals from within Worcestershire. However, there is a lack of data to be able to estimate the level of future demand for aggregate resources which local infrastructure developments might create.

7.31. There is limited data to provide a meaningful estimated of resource demand and whether this is likely to be significantly higher or lower than levels of demand over the last 10 years to facilitate understanding of the adequacy of the 10-year sales average or scale of change which may be required. However, as with housing (above), it is useful to use the 2019 aggregate survey to provide some context.

7.32. In 2019 the sand and gravel consumption in Worcestershire is estimated to equate to approximately 59% of the supply from Worcestershire making the county a net exporter of sand and gravel (see Table 9). In 2019 the following local infrastructure projects were underway in Worcestershire:

- Southern Link Road (A4440) dualling in Worcester and new bridleway bridge
- Pershore Infrastructure Improvements (Pinvin cross-roads element of project)
- A38 Bromsgrove Package 1 Barley Mow Lane completed
- Churchfields Kidderminster, major highways alterations to assist access to new housing development
- Town centre enhancements – Worcester and Kidderminster
- Sidbury and A44 signals improvement works, Worcester
- St Johns, Worcester congestion and public realm project
- Upton upon Severn flood alleviation scheme
- Worcestershire Parkway new rail station
- Kidderminster rail station redevelopment

This indicates that there was substantial local infrastructure development taking place in Worcestershire during the period covered by this data.

Nationally Significant Infrastructure Projects

7.33. There are no Nationally Significant Infrastructure Projects[48] and no significant National Highways infrastructure projects[49] planned or underway within Worcestershire. However, the West Midlands Aggregate Working Party has long believed 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 and could lead to demand within these areas being met from supply elsewhere. Failing to make adequate provision to meet this increased demand could compromise the ability for both HS2 and other developments to be delivered.

7.34. HS2 received parliamentary consent in February 2017. Although enabling works to prepare the line of route for construction also began in 2017[50] and some construction and engineering works have taken place, Phase1 was not anticipated to enter peak construction until 2023.[51] It is therefore unlikely that the anticipated levels of demand were fully reflected in the market prior to this.

7.35. The latest figures supplied to the West Midlands AWP[52] indicate demand for aggregates from the West Midlands for HS2 – Phase 1 between 2021 and 2027. The peak annual aggregate demand for aggregates from the West Midlands (2023) will be equivalent to 44% of aggregate sales in the region (2021) and total regional demand is estimated to be equivalent to approximately 7% of regional permitted reserves (2021). Since these figures were provided, the government has announced that it will "rephase" the project, delaying the expected delivery of the London to Birmingham section by at least 3 years (to spread the spend over that period) and that construction at Euston will be of a smaller scale and will not proceed until at least 2025.[53] This is likely to impact on peak annual requirements for aggregate.

7.36. In April 2021 Hudson Contract[54] reported that its clients were reporting serious shortages in construction products, suggesting that this is likely to

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[48] The National Infrastructure Planning website shows the "Redditch Branch Enhancement Scheme" as a Nationally Significant Infrastructure Project. This scheme was intended to create capacity along the single track to Redditch through the construction of a dynamic loop, consisting of approximately 3km of double track and 2 connections to the original track, allowing trains to pass one another. Consent for this scheme was granted in 2013, and the project was completed in 2014.
[49] National Highways Delivery Plan 2020-2025, https://nationalhighways.co.uk/delivery-plan/
[50] HS2 6 monthly report to Parliament: October 2020 - GOV.UK (www.gov.uk)
[51] HS2 6-monthly report to Parliament: June 2023 - GOV.UK (www.gov.uk)
[52] 2021
[53] HS2 6-monthly report to Parliament: June 2023 - GOV.UK (www.gov.uk)
[54] A payroll firm that manages the wages of more than 30,000 construction workers and supplies more than 2,500 construction companies across England and Wales

be due to materials instead supplying HS2, that the risks around availability of materials are the main threat to their growth prospects, and that the problem with the lack of building materials is most acute in the West Midlands.[55]

7.37. Permitted reserves of sand and gravel in the West Midlands at 31 December 2021 were the highest in the past 10 years and it has been indicated that much of the crushed rock demand will need to be met from supply outside of the region transported by rail.[56]

7.38. The estimated aggregate requirements shared with the West Midlands AWP did not include phase 2a or 2b. In October 2023 the Prime Minster announced that these phases were to be cancelled. The previous LAA was mindful of the potential need for resources to support these future phases, although the scale of resource needed was not known. As this has been cancelled, this no longer needs to be taken into account.

7.39. Whilst Worcestershire is some distance from the line of the remaining HS2 development, and therefore unlikely to directly supply it, additional aggregate extraction in Worcestershire could be needed in order help meet the demands placed upon aggregate supply chains in the West Midlands. However, this impact is likely to be less significant than previously anticipated because of a wider slowing of activities in the construction sector. Mineral demand dropped between mid-July and mid-October 2023, driven by weaker housebuilding activity and delays to key infrastructure projects amid persisting cost and planning challenges across key subsectors, particularly roads. On a quarterly basis, the sales volumes of ready-mix concrete and sand & gravel recorded the sharpest falls, down 15% and 12.2% respectively, the largest individual quarterly decreases in over a decade.[57]

Summary

Summary: Anticipated levels of demand – infrastructure development

Sand and gravel sales appear to be sufficient to meet the scale of likely demand for infrastructure projects within the county, although any demand for crushed rock for infrastructure development is currently being met from outside the county.

There are no Nationally Significant Infrastructure Projects or National Highways projects planned in Worcestershire.

The scale of demand for aggregates for the HS2 project is likely to impact the West Midlands as a whole, but it is difficult to quantify the impact of HS2 on the regional aggregate market. Whilst Worcestershire is some distance from the

[55] https://www.theconstructionindex.co.uk/news/view/hs2-blamed-for-materials-shortages?amp=1&s=03
[56] Staffordshire Planning Committee Report - 15th July 2021 - L.20/03/867_M (staffordshire.gov.uk)
[57] MPA Economic Market Briefing to West Midlands AWP 13/11/2023

line of the remaining HS2 development, and therefore unlikely to directly supply it and additional capacity has been permitted within the region to meet some of the identified need, additional aggregate extraction in Worcestershire could be needed in order help meet the demands placed upon aggregate supply chains in the West Midlands.

This demand is not fully reflected in 2022 sales figures as peak-demand is not anticipated to be reached until 2023 (at which point it will be maintained for approximately 5 years).

8. Primary Aggregates: Ability to Supply (indigenous supply)

Sand and gravel

Worcestershire's sand and gravel resources

8.1. There are two estimates of the quantity of sand and gravel resources which exist in Worcestershire.

8.2. The "Sub-Regional Apportionment of Aggregates Provision in the West Midlands Region 2005 – 2020 Consultation paper 17-02-2010" document was prepared for the West Midlands Regional Assembly by Land Use Consultants in February 2010. This used the British Geological Survey (BGS) mineral resource dataset (1:50,000) as the starting point for the distribution of resources in the region in GIS, and then applied the following factors which were considered to sterilise the resource:

- The road network – based on the Primary Road Network with a 5m buffer of the line features in GIS to approximate the footprint on the ground;
- Railways – based on railway data supplied by WMRA with a 5m buffer of the line features in GIS to approximate the footprint on the ground;
- Urban areas – based on the 2001 Census Urban Areas dataset; and
- Worked-out sites – based on information provided by mineral planning authorities (no GIS data on historical sites in Worcestershire was available at that time).

8.3. All international nature conservation and heritage designations were also removed to reflect the level of protection that international designations are afforded by the Planning system, and the Malvern Hills Conservators landholdings were also removed due to the restrictions on quarrying imposed by the Malvern Hills Acts.

8.4. A mean working thickness for each deposit type in each sub-region was derived and these were applied to the remaining areas of each mineral deposit to convert the area (ha) to a volume (mt) using a bulk density figure of 1675kg/m^3 for sand and gravel.

8.5. Worcestershire County Council (WCC) has since undertaken its own analysis of the mineral resources in the county.[58] This is also based on the BGS 1:50,000 GIS data, applying minimum size thresholds for the deposits considered (>10ha in area and >200m wide), and analysing BGS memoirs and planning histories to estimate the likely depth of each deposit. A conversion factor of 1.65t/m^3 for sand and gravel was applied following consultation responses, these are considered to be broadly

[58] Worcestershire County Council (Revised 2021) *Worcestershire Minerals Local Plan Background Document: Analysis of Mineral Resources in Worcestershire*, available from the archive page at www.worcestershire.gov.uk/mineralsbackground.

comparable to the bulk density figures used in the LUC report. Some consideration was given to areas sterilised by surface development, and the calculated volume was halved in estimating the available resource volume in order to recognise that some areas are overlain by dispersed development, that information about depth is limited and the quality and depth can vary across a deposit, and that constraints which will be set out in criteria-based policies have not been applied within the analysis of resources. International and national designations were also screened out.

8.6. A comparison between the two estimates can be seen in Table 10 below.

Table 10. Comparison between LUC and WCC estimates of Worcestershire's sand and gravel resources

Document estimating resource	Area of unsterilised resource (ha)	Volume of unsterilised resource (mt)
LUC	**25,036.34**	**3,222.57**
WCC Analysis of mineral resources (April 2021)	**14,543.00**	**3,960.92**

8.7. The WCC figure for the volume of unsterilised sand and gravel resource appears to be broadly comparable to those in the LUC report. Whilst the unsterilised resource area is less in the WCC analysis, due to a greater number of international and national designations having been screened from the resources, the resource volume remains broadly similar due to the use of specific depth figures for deposits rather than reliance on an average figure applied to all deposits.

8.8. This strategic-level information suggests that there is still a significant amount of sand and gravel resource in Worcestershire which is unlikely to be affected by international and national designations. However, these strategic assessments of Worcestershire's resources have limitations in relation to consideration of the quality of the resources and the degree to which they may be affected by other planning or viability constraints. Overall, Worcestershire County Council considers that this information indicates that it should be possible for the supply of sand and gravel from Worcestershire to continue for at least the short and medium-term, and this will be considered alongside other indicators in the conclusion to this section.

Summary

Summary: Ability to supply – estimated resources

There is still a significant amount of sand and gravel resource in Worcestershire which is unlikely to be affected by international and national designations. However, there is less certainty about the quality of the resources and the degree to which they may be affected by other planning or viability constraints.

Notwithstanding this, it should be possible for the supply of sand and gravel from Worcestershire to continue for at least the short and medium-term.

Replenishment and progressive exhaustion of permitted reserves over Plan period (including permitted lifespans of productive sites)

Extant sites and permitted reserves (sand and gravel)

8.9. Four sand and gravel sites in Worcestershire shown in Table 11 were "active" (in production for some time during the year) during 2022. As of 31st December 2022, all four of the active sites had permitted reserves of sand and gravel for aggregate purposes.

8.10. None of the sites active as of 31st December 2022 have conditions attached to their planning permission which would restrict the productive capacity of the site. However, proposals for decommissioning and restoration of processing plant at Ryall House Farm Quarry are required by 31st December 2023, and mineral extraction shall cease and the site shall be restored before 31st December 2026 at Ryall's Court Quarry and 31st December 2030 at Clifton Quarry.. Due to the timescales involved in getting permission for a new minerals site, and implementing said permission, this is now considered a short timescale for replenishment of this productive capacity.

8.11. During 2022, planning permission was granted to extend one of these extant sites, to extract sand to enable engineering for stability purposes and restoration of a former site, and for sand and gravel working at one new site. Together these permissions had combined permitted reserves of 2.22 million tonnes, however none of the permissions had been implemented by 31st December 2022. One site (application reference 19/000048/CM Bow Farm, Ripple) is contingent on planning permission being granted for site access and processing plant within Gloucestershire. The application for the part to the site in Gloucestershire was refused and is currently subject to appeal (see planning applications below).

Table 11. Sites with permitted reserves as of December 2022

Site name, location, and company	Planning permission end date	Limits imposed on productive capacity by planning permission	Status
Chadwich Lane Quarry Wildmoor, Bromsgrove Salop Sand and Gravel	31 December 2037	None	Active
Cinetic Quarry **(also known as Wildmoor Quarry)** Sandy Lane, Wildmoor, Bromsgrove Wildmoor Quarry Products Ltd	None stipulated (therefore 2042)	None	Active
Clifton Clifton Arles Wood, Severn Stoke Tarmac	31 December 2030 (stated on planning permission 15/000006/CM which was granted 12 July 2016, consolidating the existing quarry and new extensions into one permission)	None	Active
Ryall's Court Quarry (extraction) Ryall Court Lane, Ryall, Upton-upon-Severn Cemex UK Materials Ltd	All mineral extraction shall cease and the site shall be restored before 31st December 2026 (20/000015/CM).	None	Active (Permission 20/00009/CM for extension to Ryall's Court Quarry was granted in October 2022 and had not been implemented by 31st December 2022)
Ryall House Farm Quarry (processing) Ryall House Farm, Tewkesbury Road, Ryall, Upton-upon-Severn Cemex UK Materials Ltd	Proposals for decommissioning and restoration of Ryall House Farm Quarry[59] required by 31 December 2023. (15/000012/CM)	None	Active (processing only)
Sandy Lane Quarry, Wildmoor, Worcestershire NRS Ltd	Within 6 years of commencement of development.	None	Permission 21/000029/CM was granted in July 2022 and had not been implemented during the monitoring year.
Bow Farm, Ripple Worcestershire MC Cullimore (Gravels) Ltd	Within 9 years of commencement of development.	None	Permission 19/000048/CM was granted in November 2022 and had not been implemented during the monitoring year. Contingent on planning permission being granted for site access and processing plant within Gloucestershire.

8.12. According to returns submitted by operators of active mineral sites in Worcestershire in response to the West Midlands Aggregate Working Party Annual Monitoring Survey, the total permitted reserves for sand and gravel in Worcestershire at 31st December 2022 was 2.84 million tonnes. This is equivalent to 5.1 years at the rate of the 10-year sales average.

8.13. However this does not include the 2.22 million tonnes of reserves that were permitted in 2022 but not implemented during the monitoring year. This increases the total permitted reserves for sand and gravel in Worcestershire at 31st December 2022 to 5.06 million tonnes. This is 9.09 years at the rate of the 10-year sales average.

Summary

Summary: Ability to supply – extant and permitted reserves

Four sand and gravel sites in Worcestershire were "active" during 2022 and further reserves were permitted in 2022 which had not been implemented by 31st December 2022.

Together, the total permitted reserves for sand and gravel in Worcestershire at 31st December 2022 stood at 5.06 million tonnes.

Planning applications

8.14. Seven planning applications were under consideration during 2022 for new sites and alterations or extensions to extant sites.

8.15. Three were granted planning permission:

- Application reference 20/000009/CM, to extract 475,000 tonnes of sand and gravel as an additional phase to the already permitted Ryall North Quarry, Upton-upon-Severn, immediately to the north. Approved in October 2022.
- Application reference 21/000029/CM, for the extraction of 245,000 tonnes sand to enable engineering operations for stability purposes and completion of site restoration at (Western portion of the former) Sandy Lane Quarry, Wildmoor, Worcestershire. Approved in July 2022.
- Application reference 19/000048/CM, to extract 1.5 million tonnes of sand and gravel from a new quarry at Bow Farm, Ripple. This was approved by Worcestershire County Council's Planning and Regulatory Committee in October 2022, but is contingent on planning permission being granted for site access and processing plant within Gloucestershire. The application for the part to the site in Gloucestershire

[59] Planning permission 15/000012/CM granted 23 May 2016 to enable the continued temporary retention of aggregate wharf and aggregates processing plant at Ryall House Farm Quarry.

was refused in January 2023 (application reference 19/0081/TWMAJM) and this decision has been appealed.[60]

8.16. Four were pending determination as of 31st December 2022:

- Application reference 19/000053/CM, to extract 3 million tonnes of sand and gravel from a new quarry at Lea Castle Farm, Kidderminster.[61]
- Application reference 19/000056/CM, to extract up to 1 million tonnes of sand and gravel from a new quarry at Pinches 4, Bromsgrove.
- Application reference 21/000036/CM, to extract 250,000 tonnes of sand from a new quarry at Wilden Lane, Stourport on Severn.
- Application reference 22/000015/CM to extract 475,000 tonnes of sand and gravel from a new quarry at Ripple East, Ripple.

8.17. Five of the seven applications under consideration/determined in 2022 were for sites that have also been put forward in response to calls for sites and are being considered for potential allocation in the Mineral Site Allocations DPD.

Replenishment rates

8.18. No sand and gravel sites ceased operation in 2022. Planning permission was granted at three sites with combined permitted reserves of 2.22mt.

Pre-application discussions (sand and gravel)

8.19. In 2022 pre-application discussions were held with regard to two potential sand and gravel sites. These discussions are confidential and may not result in planning applications being brought forward[62], but they indicate that there is interest in developing further sand and gravel workings in Worcestershire.

Summary

Summary: Ability to supply – Planning applications

Seven planning applications for new extraction sites were under consideration during 2022. Three were granted planning permission with combined permitted reserves of 2.22mt. Four were pending determination as of 31st December 2022, with a combined potential resource of 4.475mt. In addition, pre-application discussions were held with regard to two further potential sand and gravel sites during 2022.

[60] Planning Inspectorate appeal reference APP/T1600/W/23/3324695. As of 1/11/23 , the appeal has not yet been decided.
[61] This application was refused in June 2022. This was subsequently refused at appeal, and the appeal decision is currently subject to judicial review (claim number AC-2023-BHM-000122, previously CO/2189/2023). This was heard on 31st October 2023, but as of 1/11/2023 the judgement has not yet been handed down.
[62] For example, of six potential sites discussed in 2021, two have since come forward as planning applications.

Site allocations

8.20. Until July 2022, the extant Minerals Local Plan was the County of Hereford and Worcester Minerals Local Plan (1997). It was beyond its expected implementation period, with a limited number of Preferred Areas and saved policies. It contained two remaining site allocations; a site at Strensham, which was subject to planning application 09/000085/CM, withdrawn in 2017, and an extension to Aston Mill, Kemerton, which was understood to have not been worked due to the quality and quantity of the mineral deposit.

8.21. In July 2022, a new Worcestershire Minerals Local Plan (2018-2036) was adopted which identifies that new sites and alterations or extensions to extant sites will be required to provide at least a further 11.407 million tonnes of sand and gravel over the plan period, in addition to the plan's baseline of permitted reserves at the end of 2017 of 3.465 million tonnes. The new Minerals Local Plan supersedes the previously saved "policies" of the County of Hereford and Worcester Minerals Local Plan (1997), including its site allocations.

8.22. The Minerals Local Plan (2018-2036) contains policies to enable both new mineral development and extensions to existing sites, and it allocates 100 areas of search for sand and gravel (70 for terrace and glacial sand and gravel resources, and 30 for solid sand resources). It also commits to the development of a separate Mineral Site Allocations Development Plan Document to allocate specific sites and/or preferred areas.

8.23. Seven planning applications were under consideration during 2022 for new sites and alterations or extensions to extant sites (see below for further information). All of these were within or partially within areas of search identified in the Minerals Local Plan (2018-2036).

8.24. Five calls for sites have been undertaken in the development of the new Minerals Local Plan and Mineral Site Allocations Development Plan Document between 2014 and 2020. The minerals industry and Mineral Products Association had previously stated that they struggled to find sand and gravel sites of sufficient size to work in Worcestershire, except as isolated satellite operations which were not long term solutions.[63] However, a number of potential sites for sand and gravel extraction have been proposed by the minerals industry and/or landowners in response to the calls for sites, and these sites are under consideration as potential sites for allocation in the Mineral Site Allocations Development Plan Document (DPD). Some of these have also been submitted as planning applications.

Summary

[63] Mineral Products Association comments on Minerals Local Plan Background Documents consultation, summer 2015 (response reference D024-1899)

Summary: Ability to supply – Site allocations

In July 2022, a new Worcestershire Minerals Local Plan (2018-2036) was adopted containing policies to enable both new mineral development and extensions or alterations to existing sites, and to facilitate this it allocates 100 areas of search for sand and gravel (70 for terrace and glacial sand and gravel resources, and 30 for solid sand resources).

Specific sites and preferred areas have not yet been allocated through a separate Mineral Site Allocations Development Plan Document.

Crushed rock

Worcestershire's crushed rock resources

8.25. There are two estimates of the quantity of crushed rock resources which exist in Worcestershire.

8.26. The "Sub-Regional Apportionment of Aggregates Provision in the West Midlands Region 2005 – 2020 Consultation paper 17-02-2010" document was prepared for the West Midlands Regional Assembly by Land Use Consultants in February 2010. This used the British Geological Survey (BGS) mineral resource dataset (1:50,000) as the starting point for the distribution of resources in the region in GIS, and then applied the following factors which were considered to sterilise the resource:

- The road network – based on the Primary Road Network with a 5m buffer of the line features in GIS to approximate the footprint on the ground;
- Railways – based on railway data supplied by WMRA with a 5m buffer of the line features in GIS to approximate the footprint on the ground;
- Urban areas – based on the 2001 Census Urban Areas dataset; and
- Worked-out sites – based on information provided by mineral planning authorities (no GIS data on historical sites in Worcestershire was available at that time).

8.27. All international nature conservation and heritage designations were also removed to reflect the level of protection that international designations are afforded by the Planning system, and the Malvern Hills Conservators landholdings were also removed due to the restrictions on quarrying imposed by the Malvern Hills Acts.

8.28. A mean working thickness for each deposit type in each sub-region was derived and these were applied to the remaining areas of each mineral deposit to convert the area (ha) to a volume (mt) using a bulk density figure of 2600kg/m3 for hard rock.

8.29. Worcestershire County Council (WCC) has since undertaken its own analysis of the mineral resources in the county.[64] This is also based on the BGS 1:50,000 GIS data, applying minimum size thresholds for the deposits considered (>10ha in area and >200m wide), and analysing BGS memoirs and planning histories to estimate the likely depth of each deposit. A conversion factor of 2.45t/m3 for crushed rock was applied following consultation responses, these are considered to be broadly comparable to the bulk density figures used in the LUC report. Some consideration was given to areas sterilised by surface development, and the calculated volume was halved in estimating the available resource volume in order to recognise that some areas are overlain by dispersed development, that information about depth is limited and the quality and depth can vary across a deposit, and that constraints which will be set out in criteria-based policies have not been applied within the analysis of resources. International and national designations were also screened out.

8.30. A comparison between the two estimates can be seen in Table 12 below.

Table 12. Comparison between LUC and WCC estimates of Worcestershire's crushed rock resources.

Document estimating resource	Area of unsterilized resource (ha)	Volume of unsterilized resource (mt)
LUC	508.98	427.58
WCC Analysis of mineral resources (April 2021)	61	1.47

8.31. The difference in the figures for crushed rock is likely to be explained by differences in the screening methodology between the two assessments. The WCC Analysis of Mineral Resources screens out a number of crushed rock deposits based upon their size, before any screening based on international and national designations is undertaken.

8.32. These strategic-level assessments suggest that there is either a very small or a relatively small amount of crushed rock resource in Worcestershire which is unlikely to be affected by international or national designations. These strategic assessments also have limitations in relation to consideration of the quality of the resources and the degree to which they may be affected by other planning or viability constraints. The constraints considered in these assessments are not necessarily an absolute bar to working the crushed rock resources in Worcestershire, but they are highly likely to limit the commercial attractiveness of those resources.

Summary

Summary: Ability to supply – estimated resources

[64] Worcestershire County Council (Revised 2021) *Worcestershire Minerals Local Plan Background Document: Analysis of Mineral Resources in Worcestershire*, available from the archive page at www.worcestershire.gov.uk/mineralsbackground.

There is only a small amount of crushed rock resource in Worcestershire which is unlikely to be affected by international or national designations. Although these constraints are not necessarily an absolute bar to working the crushed rock resources in Worcestershire, they are highly likely to limit the commercial attractiveness of those resources.

Extant sites, permitted reserves and applications pending

8.33. There were no sites with permitted reserves of crushed rock during in 2022, and no planning applications for working crushed rock are pending decision. This means that Worcestershire has no permitted reserves, no productive capacity and no landbank for crushed rock.

Planning applications

8.34. No planning applications for new crushed rock extraction sites were under consideration during 2022.

Pre-application discussions (crushed rock)

8.35. No pre-application discussions were held in 2022 held regarding potential crushed rock sites.

Site allocations

8.36. Until July 2022, the extant Minerals Local Plan was the County of Hereford and Worcester Minerals Local Plan (1997). This allocated one preferred area for hard rock working in Worcestershire at Fish Hill near Broadway. This has been worked and the site is currently in aftercare. There were therefore no remaining site allocations for crushed rock in Worcestershire in the 1997 Minerals Local Plan.

8.37. A new Minerals Local Plan (2018-2036) was adopted in July 2022 which highlights that planning permissions would be required for at least 4.727 million tonnes of crushed rock over the life of the plan in order to meet the scale of provision indicated by the sub-regional apportionment. The new Minerals Local Plan supersedes the previously saved "policies" of the County of Hereford and Worcester Minerals Local Plan (1997), including its site allocations.

8.38. The Minerals Local Plan contains policies to enable both new mineral development and extensions to existing sites. It does not allocate any areas of search for crushed rock, but it includes criteria-based policies to enable crushed rock development on windfall sites.

8.39. The Minerals Local Plan also commits to the development of a separate Mineral Site Allocations Development Plan Document. Five calls for sites have been undertaken in the development of the new Minerals Local Plan and Mineral Site Allocations Development Plan Document between 2014 and 2020, but no sites for crushed rock have been proposed by the minerals industry or landowners.

Summary

Summary: Ability to supply – Permitted reserves and industry interest

Worcestershire has no permitted reserves, no productive capacity and no landbank for crushed rock. There were no planning applications for crushed rock under consideration during 2022 and no pre-application discussions, and no sites for crushed rock have been proposed by the minerals industry or landowners in response to five calls for sites between 2014 and 2020.

This is a strong indication that there is limited interest in developing crushed rock workings in Worcestershire in the immediate future.

Transport considerations

8.40. Worcestershire does not have any rail depots for the import or export of minerals (including secondary and recycled materials). Water transportation takes place on the River Severn, but this is limited to moving "as-dug" primary aggregates from one site in Worcestershire to processing plant at another. The wharves at these sites therefore do not currently enable imports or exports of minerals. It is therefore concluded that all transport movements of minerals, including imports and exports, currently take place by road transport.

8.41. However, none of the sites in Worcestershire (as of December 2021) has conditions attached to its planning permission which would restrict the productive capacity of the site or the ability for materials to be transported to markets.

9. Setting the production guideline

9.1. The starting point for identifying the production guideline is the 10-year sales average. Other supply and demand factors are then taken into account to identify whether the production guideline should be higher or lower than the 10-year sales average, based on the indicators agreed by West Midlands Aggregate Working Party (see Appendix 2).

Sand and gravel

Overview

9.2. The 10-year sales average for sand and gravel is 0.556 million tonnes. This has increased each year for the last 3 years.

9.3. None of the indicators considered in the LAA and summarised in Table 13 suggest that the production guideline should be lower than the 10-year average. The following indicators suggest that an increase above the 10-year average may be appropriate:

- Annual sales variation
- 3 years sales average (AWP indicator 5)
- Sub-regional apportionment (AWP indicator 6)
- Infrastructure development (AWP indicator 3 and 4)

9.4. Consideration also needs to be given to the ability to supply minerals from Worcestershire. The supply indicators summarised in Table 13 suggest that an increase above the 10-year average could be accommodated.

9.5. Based on the consideration of these indicators, this LAA therefore sets a production guideline derived from “the 10-year sales average +20%”.

9.6. This will support the continuation of recent supply levels and mitigate any potential impacts on the production guideline from County of Hereford and Worcester Minerals Local Plan (1997) being in place well beyond its expected implementation period, thereby potentially depressing the annual sales figure due to additional barriers to development rather than lower levels of demand. The 20% uplift will also support the anticipated scale of demand for housing and infrastructure development and allow some flexibility in relation to demand for HS2 and other development needs. This approach will be kept under review in future LAAs, particularly to monitor the impact of the Worcestershire Minerals Local Plan (2018-2036) which was adopted in July 2022 and greater certainty once the HS2 project moves into a period of peak demand, and this is reflected in 2023 and 2024 sales figures.

9.7. The annual production guideline for sand and gravel identified by this Local Aggregates Assessment is derived from the 10-year sales average +20% is 0.667 million tonnes.

Table 13. Supply and demand indicators: Sand and Gravel

Indicator	Summary	Indication in relation to 10-year average
Contribution to supply from substitute, secondary and recycled aggregates (AWP indicator 14)	Substitute, secondary and recycled aggregates are likely to be play an important role in supply however there is limited data available to assess this. The LAA will assume that the contribution of substitute, secondary and recycled materials is already accounted for prior to considering the sales figures for primary aggregates.	No change indicated by this data.
Demand: Variation in 10 year average sales	The 10-year average of sales from 2013 is 0.556 million tonnes. This has remained broadly stable for the last 6 years.	No change indicated by this data.
Demand: Annual Sales variation	For 2022 sales of sand and gravel in Worcestershire were 20% higher than the 10-year sales average at 0.668 million tonnes. Four of the last five years sales were also higher than 10 year average sales.	Indicator for increase above 10-year average.
Levels of imports and exports (AWP indicator 11).	In 2019 Worcestershire was a net importer of primary aggregates but a net exporter of sand and gravel. 44% of sand and gravel produced in Worcestershire was used within the county with 85% used within the West Midlands. Worcestershire therefore plays a regional role in the supply of sand and gravel. Due to data limitations comparison to 2009 and	No change indicated by this data.

Indicator	Summary	Indication in relation to 10-year average
	2014 data is not possible.	
Demand: Total consumption	In 2019 consumption of sand and gravel in Worcestershire was estimated to be 0.392 million tonnes, this is equivalent to 59% of sand and gravel supply from the County. Worcestershire therefore plays a regional role in the supply of sand and gravel.	No change indicated by this data.
Demand: 3 years sales average (AWP indicator 5)	The 3-year sales average for sand and gravel is 4.6% higher than the 10-year average but is 15% lower than the 2022 sales figure. Where 2020 sales figures are excluded (due to the impacts of the pandemic) the 3-year average sales[65] are broadly comparable to the 2022 sales figures.	Indicator for increase above 10-year average.
Demand: Sub-regional apportionment (AWP indicator 6)	The sub-regional apportionment for Worcestershire over the period 2001-2016 was 0.871 million tonnes of sand and gravel. For sand and gravel this is 30% higher than the 2022 sales and is 57% higher than the 10-year average. This level of production has not been achieved in Worcestershire since 2003. There are no up-to-date national guidelines and therefore no up-to-date sub-regional apportionment.	Weak indicator for increase above 10-year average

[65] Mean average of 2019, 2021 and 2022 sales.

Indicator	Summary	Indication in relation to 10-year average
	Limited weight has been given to this indicator.	
Demand: housing development (AWP indicator 1)	Planned levels of housing provision in Worcestershire over the next 10 years are higher than the average annual completions over the last 10 years, but are comparable to the scale of development achieved in Worcestershire in 2015 and lower than that achieved in the 4 years prior to March 2021, when sand and gravel sales were comparable to the current the 10-year average. This provides some confidence in the ability to supply the local housing market based on sales are equivalent to the 10-year sales average. It has not been possible to consider the impact of regional demand for sand and gravel for housing, but national forecasts by the minerals industry suggest either some contraction or low levels of growth in housing construction in the immediate future.	No change indicated by this data.
Demand: Employment development (AWP indicator 2)	There is a lack of robust data about this indicator. However, 752ha of employment land is currently allocated in Local Plans across Worcestershire.	No change indicated by this data.
Demand: Infrastructure development (AWP indicator 3 and 4)	Sand and gravel sales appear to be sufficient to meet the scale of likely demand for infrastructure	Indicator for increase above 10-year average.

Indicator	Summary	Indication in relation to 10-year average
	projects within the county, and there are no Nationally Significant Infrastructure Projects or National Highways projects planned in Worcestershire. The scale of demand for aggregates for the HS2 project is likely to impact the West Midlands as a whole, but it is difficult to quantify the impact of HS2 on the regional aggregate market. Whilst Worcestershire is some distance from the line of the HS2 development, and therefore unlikely to directly supply it and additional capacity has been permitted within the region to meet some of the identified need, additional aggregate extraction in Worcestershire could be needed in order help meet the demands placed upon aggregate supply chains in the West Midlands. Peak annual aggregate demand for HS2 is not anticipated to be reached until 2023 (at which point it will be maintained for approximately 5 years).	
Supply: Estimated geological reserves (AWP indicator 12)	There is still a significant amount of sand and gravel resource in Worcestershire which is unlikely to be affected by international and national designations. The Worcestershire Minerals Local Plan allocates	No change indicated by this data.

Indicator	Summary	Indication in relation to 10-year average
	significant areas of mineral resource as areas of search. However, there is less certainty about the quality of the resources and the degree to which they may be affected by other planning or viability constraints.	
Supply: Replenishment and progressive exhaustion of permitted reserves over Plan period (including permitted lifespans of productive sites). (AWP indicator 9)	Four sand and gravel sites in Worcestershire were "active" during 2022 with total permitted reserves of 2.84 million tonnes. No sand and gravel sites ceased operation in 2022. An additional 2.22 million tonnes of reserves were permitted in 2022 which increase the total permitted reserves for sand and gravel in Worcestershire at 31st December 2022 to 5.06 million tonnes, although these permissions had not been implemented by the end of 2022.	Information presents a positive indication of ability to supply in the medium term and therefore supports ongoing supply of sand and gravel from Worcestershire.
Supply: Quality and/or capacity constraints of existing permitted reserves (AWP indicator 7)	None of Worcestershire's sites active or permitted sites as of 31st December 2022 has conditions attached to its planning permission which would restrict the productive capacity of the site, and there are no known quality constraints likely to impact those permitted reserves. However all permissions have a time limit. In addition, development at Bow Farm was	Information presents a positive indication of ability to supply in the medium term and therefore supports ongoing supply of sand and gravel from Worcestershire.

Indicator	Summary	Indication in relation to 10-year average
	permitted in 2022 but implementation of this permission is contingent on planning permission being granted for site access and processing plant within Gloucestershire. The application for the part to the site in Gloucestershire was refused in January 2023 and this decision has been appealed.	
Supply: Site allocations (AWP indicators 9 &13)	In July 2022, a new Worcestershire Minerals Local Plan (2018-2036) was adopted containing policies to enable both new mineral development and alterations/extensions to existing sites. It allocates 100 areas of search for sand and gravel (70 for terrace and glacial sand and gravel resources, and 30 for solid sand resources). Five calls for sites have resulted in a number of potential sites being put forward, and these are under consideration in the development of a separate Mineral Site Allocations DPD, but this remains some way from adoption.	Information supports ongoing supply of sand and gravel from Worcestershire and is a positive indication of ability to supply in the medium term.
Supply: Windfall minerals permissions/trends (AWP indicator 8)	Whilst planning permissions have been granted in Worcestershire for sand and gravel development on windfall sites over recent years, the policy environment has changed significantly with the adoption of the	There is no strong trend in terms of windfall permissions which would indicate the appropriateness of any particular production guideline.

Indicator	Summary	Indication in relation to 10-year average
	Minerals Local Plan in 2022, which allocates 100 areas of search for sand and gravel. The seven planning applications for sand and gravel which were under consideration during 2022 were all within or partially within areas of search identified in the Minerals Local Plan (2018-2036).	
Supply: Industry Interest	A number of potential sites for sand and gravel extraction have been proposed by the minerals industry and/or landowners in response to the calls for sites. In addition, seven planning applications for sand and gravel were under consideration during 2022 for new sites and alterations or extensions to extant sites. Three of these applications were determined and are considered above in the discussion of replenishment of reserves. The remaining four applications have a potential combined resource of 4.475 million tonnes of sand and gravel, which is equivalent to more than 8 times the 10-year sales average. In addition, pre-application discussions	Information supports ongoing supply of sand and gravel from Worcestershire and is a positive indication of ability to supply in the medium term.

Indicator	Summary	Indication in relation to 10-year average
	were held with regard to two further potential sand and gravel sites during 2022. It is not known whether these applications and pre-application proposals will be permitted, but this provides a useful indicator of the level of operator interest in the county.	
Supply: Transport constraints affecting markets for aggregates (AWP indicator 10)	Other than moving "as-dug" primary aggregates from one site in Worcestershire to processing plant at another, all transport movements of minerals in Worcestershire, including imports and exports, currently take place by road transport. However, none of the sites in Worcestershire (as of December 2021) has conditions attached to its planning permission which would restrict the productive capacity of the site or the ability for materials to be transported to markets.	No change indicated by this data.

Variation from previous approaches to identifying the production guideline

9.8. The production guideline for Worcestershire for the last 4 years (up to 2021 data) was derived from “the 10-year sales average +50%”. This uplift was based on the consideration of demand indicators at the time; HS2 was considered to be a “strong indicator for increase significantly above 10-year average” and gross housing completions were also considered as a (weak) indicator for a production guideline above the 10-year average. At the time it was noted that sand and gravel supply from Worcestershire is unlikely to directly supply HS2 but there was concern that additional

aggregate extraction in Worcestershire could be needed in order help meet the demands placed upon aggregate supply chains in the West Midlands. This was in the context of a period of economic growth, particularly in the construction sector. In addition, confidence in the 10-year sales average as an indicator for demand was low because of the potential impacts of County of Hereford and Worcester Minerals Local Plan (1997) being in place well beyond its expected implementation period, thereby potentially depressing the annual sales figure due to additional barriers to development rather than lower levels of demand.

9.9. Given the discussion above relating to the changes to phasing of HS2 phase 1, the cancellation of HS2 phase 2a and 2b and the increased capacity within the region with the highest landbank in 10 years, the impacts of HS2 are now a weaker indicators for deviation from the 10 year sales average. In addition the draw-down impacts are likely to be less significant than previously anticipated because of a wider slowing of activities in the construction sector. Mineral demand dropped between mid-July and mid-October 2023, driven by weaker housebuilding activity and delays to key infrastructure projects amid persisting cost and planning challenges across key subsectors, particularly in roads. On a quarterly basis, the sales volumes of ready-mix concrete and sand & gravel recorded the sharpest falls, down 15% and 12.2% respectively, the largest individual quarterly decreases in over a decade.[66] The scale of uplift has therefore been reassessed in developing the production guideline in this LAA.

9.10. Greater weight has also been given to the annual sales variation, which was not considered explicitly in the previous LAA, and the 3-year sales average as the impact of covid restrictions on longer term trends is now easier to see.

9.11. In addition, supply indicators need to be considered. Whilst some level of uplift above the 10 year average can potentially be accommodated, if the LAA were to continue to use “10-year sales average +50%” this would give a production guideline of 0.834 tonnes per annum. This level of annual provision has not been achieved in Worcestershire since 2003 and has only been met or exceed in 3 of the last 25 years. It is therefore unlikely to be achievable, at least in the short term.

Summary

Summary: Production guideline – Sand and gravel

The annual production guideline for sand and gravel identified by this Local Aggregates Assessment is derived from the 10-year sales average +20% and is 0.667 million tonnes per annum.

[66] MPA Economic Market Briefing to West Midlands AWP 13/11/2023

Crushed rock

9.12. The 10-year sales average for crushed rock is 0 tonnes and has been 0 tonnes for the last 12 years.

9.13. The indicators considered in the LAA and summarised in Table 14 suggest that Worcestershire should seek some level of provision from its indigenous crushed rock resources and that the production guideline should be greater than zero. The following demand indicators suggest that an increase above the 10-year average may be appropriate:

- Levels of imports and exports (AWP indicator 11)
- Sub-regional apportionment (AWP indicator 6)
- **Housing development** (AWP indicator 1) and **Employment development** (AWP indicator 2)
- Infrastructure development (AWP indicator 3 and 4)

9.14. However consideration also needs to be given to the ability to supply crushed rock minerals from Worcestershire. There are very significant limitations on the county's crushed rock resources. The following indicators (summarised in Table 14) suggest that there are short- to medium-term (and possibly long-term) limitations on Worcestershire's ability to supply crushed rock:

- Estimated geological reserves (AWP indicator 12)
- Replenishment and progressive exhaustion of permitted reserves (AWP indicator 9)
- Quality and/or capacity constraints of existing permitted reserves (AWP indicator 7)

9.15. Taking account of these indicators and recognising the National Planning Policy Framework's requirement to maintain at least a 10-year landbank of permitted reserves of crushed rock and the Minerals Local Plan's recognition that Worcestershire should seek some level of provision from its indigenous crushed rock resources, this LAA seeks to establish a production guideline above the 10 years sales average of zero.

9.16. This will avoid a production guideline of zero potentially being viewed as being a barrier to crushed rock development. However, a percentage uplift cannot be applied from a starting point of 0 tonnes, and in light of the significant limitations on Worcestershire's ability to supply, at least in the short term, a specific figure for the production guideline cannot be calculated.

9.17. This LAA therefore sets the production guideline for crushed rock in Worcestershire as "explicitly greater than 0 tonnes" but does not set a tonnage figure.

Table 14. Supply and demand indicators: Crushed Rock

Indicator	Summary	Indication in relation to 10-year average
Contribution to supply from substitute, secondary and recycled aggregates (AWP indicator 14)	Substitute, secondary and recycled aggregates are likely to be play an important role in supply however there is limited data available to assess this. The LAA will assume that the contribution of substitute, secondary and recycled materials is already accounted for prior to considering the sales figures for primary aggregates.	No change indicated by this data.
Demand: Variation in 10 year average sales	The 10-year average of sales from 2013-2022 is 0 tonnes. This has been the case for 4 years. This is likely to reflect limitations on Worcestershire's ability to supply, rather than reflect the scale of demand for crushed rock.	This is likely to reflect limitations on Worcestershire's ability to supply, rather than reflect the scale of demand for crushed rock and is not an indicator of demand for Worcestershire.
Supply: Annual Sales variation	For 2022 sales of crushed rock in Worcestershire were 0 tonnes, and this has been the case since 2010. This is likely to reflect limitations on Worcestershire's ability to supply, rather than reflect the scale of demand for crushed rock.	This is likely to reflect limitations on Worcestershire's ability to supply, rather than reflect the scale of demand for crushed rock and is not an indicator of demand for Worcestershire.
Levels of imports and exports (AWP indicator 11).	In 2019 Worcestershire was a net importer of primary aggregates and net importer of crushed rock.	Strong indicator for increase above 10-year average.
Demand: Total consumption	In 2019 consumption of crushed rock in Worcestershire was estimated to be 0.733 million tonnes.	Strong indicator for increase above 10-year average.
Demand: 3 years sales average (AWP indicator 5)	The 3-year sales average is 0 tonnes. This is likely to reflect limitations on	This is likely to reflect limitations on Worcestershire's ability

Indicator	Summary	Indication in relation to 10-year average
	Worcestershire's ability to supply, rather than reflect the scale of demand for crushed rock.	to supply, rather than reflect the scale of demand for crushed rock and is not an indicator of demand for Worcestershire.
Demand: Sub-regional apportionment (AWP indicator 6)	The sub-regional apportionment for Worcestershire over the period 2001-2016 was 0.163 million tonnes of crushed rock. There has been no crushed rock production in Worcestershire since 2009, and this level of production has not been achieved in Worcestershire since 2002. Although there are no up-to-date national guidelines and therefore no up-to-date sub-regional apportionment, in the absence of any sales data in the county over the last 10 years, some weight has been given to this indicator.	Weak indicator for increase above 10 year average
Demand: housing development (AWP indicator 1)	Planned levels of housing provision in Worcestershire over the next 10 years are higher than the average annual completions over the last 10 years, but are comparable to the scale of development achieved in Worcestershire in 2015 and lower than that achieved in the 4 years prior to March 2021. Over that period, there was no indigenous supply of crushed rock in Worcestershire. It has not been possible to consider the impact of regional demand for sand and gravel for housing, but	Indicator for increase above 10-year average.

Indicator	Summary	Indication in relation to 10-year average
	national forecasts by the minerals industry suggest either some contraction or low levels of growth in housing construction in the immediate future.	
Demand: Employment development (AWP indicator 2)	There is a lack of robust data about this indicator. However, 752ha of employment land is currently allocated in Local Plans across Worcestershire.	Indicator for increase above 10-year average.
Demand: Infrastructure development (AWP indicator 3 and 4)	There is currently no indigenous supply of crushed rock to support the likely demand for infrastructure development in Worcestershire. Although there are no Nationally Significant Infrastructure Projects or National Highways projects planned in Worcestershire, the scale of demand for aggregates for the HS2 project is likely to impact the West Midlands as a whole. Demand from HS2 is anticipated peak in 2023 and then be maintained for approximately 5 years. With no current extraction or proposals pending determination, it is unlikely that Worcestershire will be able to contribute to meeting any demand on these timescales, but may be able to contribute to replenishing stocks of permitted reserves in the longer term.	Indicator for increase above 10-year average.
Supply: Estimated geological reserves (AWP indicator 12)	There is only a small amount of crushed rock resource in Worcestershire which is unlikely to be affected by international or	Strong indication of limitations on ability to supply crushed rock.

Indicator	Summary	Indication in relation to 10-year average
	national designations. Although these constraints are not necessarily an absolute bar to working the crushed rock resources in Worcestershire, they are highly likely to limit the commercial attractiveness of those resources.	
Supply: Replenishment and progressive exhaustion of permitted reserves over Plan period (including permitted lifespans of productive sites). (AWP indicator 9)	No crushed rock sites were "active" in Worcestershire during 2022. The total permitted reserves for sand and gravel in Worcestershire at 31st December 2022 was 0 tonnes.	Strong indication of short- to medium-term limitations on ability to supply crushed rock.
Supply: Quality and/or capacity constraints of existing permitted reserves (AWP indicator 7)	There are no sites with permitted reserves.	Strong indication of short- to medium-term limitations on ability to supply crushed rock.
Supply: Site allocations (AWP indicators 9 &13)	In July 2022, a new Worcestershire Minerals Local Plan (2018-2036) was adopted. It does not allocate any areas of search for crushed rock, but it includes criteria-based policies to enable crushed rock development on windfall sites and contains policy support for crushed rock development within Worcestershire. Five calls for sites have been undertaken however no potential sites have been put forward for crushed rock.	Strong indication of limitations on ability to supply crushed rock in the short and medium term, and possibly in the longer term.
Supply: Windfall minerals permissions/trends (AWP indicator 8)	Whilst no planning permissions have been granted in Worcestershire for crushed rock development on windfall	No change indicated by this data.

Indicator	Summary	Indication in relation to 10-year average
	sites over recent years, the policy environment has changed significantly with the adoption of the Minerals Local Plan in 2022.	
Supply: Industry Interest	There are no planning applications for crushed rock pending decision, no pre-application discussions have been held, and no sites were promoted in response to the 'calls for sites' undertaken to prepare the Mineral Site Allocations DPD. This strongly indicates that there are likely to be limitations in relation to the quality of the resources and/or the degree to which they may be affected by other planning or viability constraints.	Strong indication of limitations on ability to supply crushed rock in the short and medium term, and possibly in the longer term.
Supply: Transport constraints affecting markets for aggregates (AWP indicator 10)	All transport movements of minerals in Worcestershire, including imports and exports, currently take place by road transport.	No change indicated by this data.

Summary

Summary: Production guideline – Crushed Rock

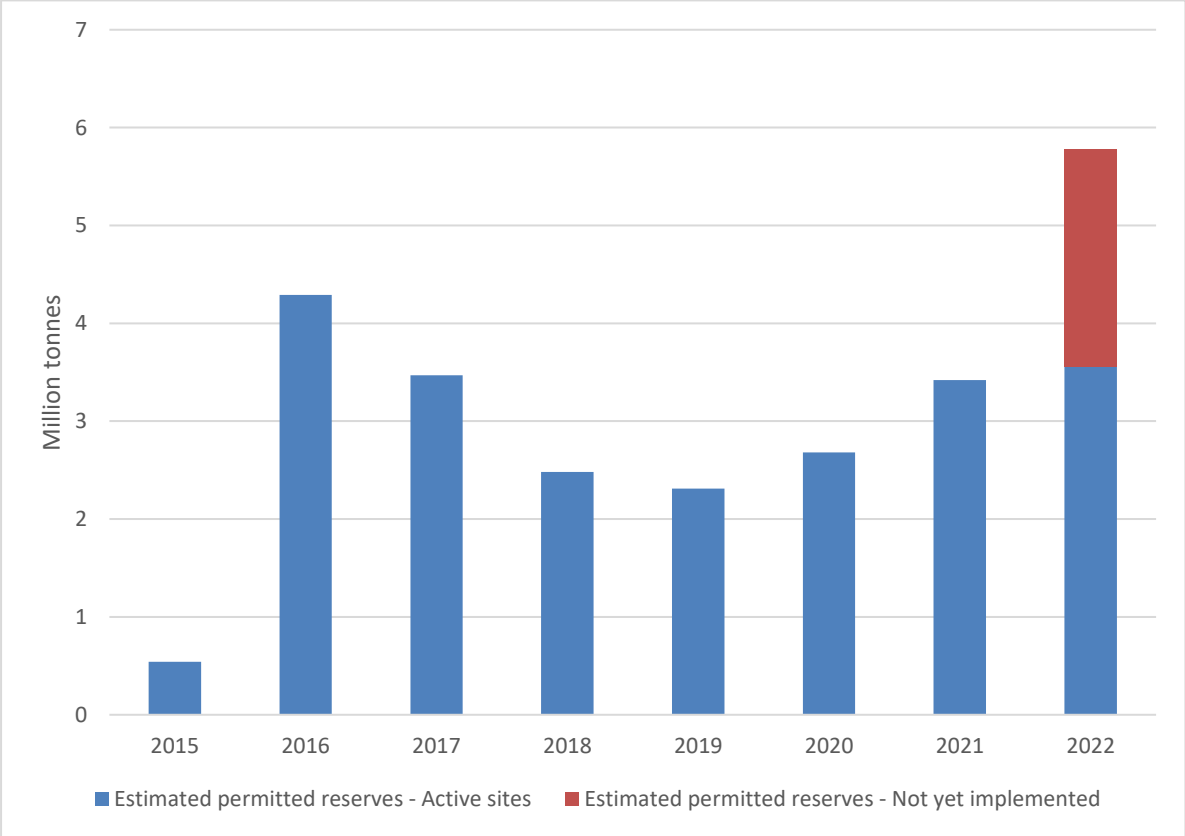
The production guideline for crushed rock identified by this Local Aggregates Assessment is "explicitly greater than 0 tonnes per annum" but there is not set a tonnage figure.

10. Landbank and productive capacity

Sand and gravel

10.1. There are four active sand and gravel sites in Worcestershire with estimated reserves of 2.841 million tonnes. There are three additional sites in Worcestershire with permitted reserves which had not yet implemented planning permission by the end of 2022, with combined estimated reserves of 2.22 million tonnes. It should be noted that for one site (Bow Farm, Ripple) reserves of 1.5 million tonnes of sand and gravel were permitted in Worcestershire but development of the site is contingent on planning permission being granted for site access and processing plant within Gloucestershire. The application for the part to the site in Gloucestershire was refused in January 2023 and this decision has been appealed.[67]

Table 15. Estimated reserves: Sand and gravel



[67] Planning Inspectorate appeal reference APP/T1600/W/23/3324695. As of 1/11/23, the appeal has not yet been decided.

Table 16. Estimated permitted reserves[68], landbank and production guideline

Year	Reserves (million tonnes)	Production guideline (million tonnes)	Landbank (in years)	Method used to establish production guideline
2015	0.54	0.637	0.85	10 yr sales average
2016	4.29	0.607	7.07 ↑	10 yr sales average
2017	3.47	0.572	6.07 ↓	10 yr sales average
2018	2.48	0.833	2.98 ↓	10 yr sales average + 50%
2019	2.31	0.852	2.71 ↓	10 yr sales average + 50%
2020	2.68	0.853	3.14 ↑	10 yr sales average + 50%
2021	3.42	0.827	4.14 ↑	10 yr sales average + 50%
2022	5.06	0.667	7.59 ↑	10 yr sales average + 20%

Summary

Summary: Landbank – Sand and gravel

Based on the production guideline of 0.667 million tonnes and the stock of permitted reserves of 5.06 million tonnes, **Worcestershire had a sand and gravel landbank of 7.59 years at 31st December 2022.** [69]

Crushed rock

10.2. There were no active crushed rock sites in Worcestershire in 2022 and no permitted reserves. There have been no permitted reserves and therefore no landbank since 2009.

Summary

Summary: Landbank – crushed rock

Based on the production guideline for crushed rock of "explicitly greater than 0 tonnes per annum" and no permitted reserves the **Worcestershire had a crushed rock landbank of 0 years at 31st December 2022.**

[68] In calculating landbanks, the term permitted reserve includes current non-working sites but excludes those sites where mineral working cannot take place until there has been a review of the planning conditions attached to their planning permission. Minerals - GOV.UK (www.gov.uk) Paragraph: 083 Reference ID: 27-083-20140306 Revision date: 06 03 2014

[69] Contingent on planning permission being granted for site access and processing plant within Gloucestershire.

Appendix 1: Consultation with Aggregate Working Parties

A draft of this Local Aggregates Assessment was sent to the West Midlands, East Midlands, South West and South Wales Aggregate Working Parties for consultation in November 2022.

The following comments were received from the AWPs and their members:

West Midlands AWP:

- Staffordshire County Council

South West AWP:

- Gloucestershire County Council
- Somerset Council

Staffordshire County Council

Section in Document (e.g. paragraph/ page number)	Comment
Paragraph 1.7	In questioning the 20% uplift of the 10 years sales average, I suggest it would be useful to understand more about 'the potential' impact on the production guideline from the former County of Hereford and Worcester Minerals Local Plan (1997) being in place well beyond its expected implementation'. For example, could WCC provide data of the number of operational sites for each year of annual sales as listed in Table 2?
pg. 16-21, Table 5	While Section 6 provides evidence to demonstrate that Worcestershire is a net exporter of sand and gravel, the AM survey of 2019 indicates that there were 103,000t of sand and gravel imports which helped to support a consumption of 392,000t in the county i.e. ¼ of consumption was based on imports (acknowledging that more than half of the sales from the county were exported). Can the proposed uplift be justified on a need to increase local supply to sustain provision for local consumption and/or to meet the need for consumption in the West Midlands conurbation and/or Herefordshire?
	Finally, how sustainable is the 20% uplift over the Plan period in relation to permitted reserves/allocated resources or resources arising from anticipated sites say compared with the baseline level of provision of 572,000 tpa made in the Mineral Local Plan?

Gloucestershire County Council

GLOUCESTERSHIRE COUNTY COUNCIL | MINERALS AND WASTE PLANNING AUTHORITY | CONSULTATION RESPONSE FORM

This response is provided by officers of the County Council acting only in its capacity as the minerals and waste planning authority for Gloucestershire. Further notifications to the County Council in respect of its other regulatory responsibilities may still be necessary in order to establish a holistic view from Gloucestershire County Council.

GCC M&W Reference:	**PR2023/0263/1/LAA**	**Notifiers Reference** (if provided)**:**		**Notifying Organisation:**	SW AWP
GCC M&W Responding Officer:	Laura Burford	**Date of GCC M&W Response:**	14/12/2023	**Type of Consultation:**	Local Aggregates Assessment
Consultation Title:	Worcestershire's Draft LAA (using 2022 data)				

'X' in a box represents the officer-level response given at this time

M&W officers have reviewed the consultation information and at this time **do not** consider it likely that materially significant mineral and waste impacts will emerge as a result of implementing the consultation's proposals. M&W officers have based this response on potential impacts relating to: - Gloucestershire's mineral resources; the supply of minerals from and / or into Gloucestershire; and the ability of the county's network of waste management facilities to operate at its full permitted potential | M&W OFFICERS RAISE NO OBJECTION	X
M&W officers have reviewed the consultation information and have **no further comments to make**.	X
M&W officers have reviewed the consultation information and recommend **that a revision(s) would be of benefit to the next version of / the final version of the item being consulted upon**:- (e.g. document; plan; policy; policies; strategy; road-map; framework; guide; guidance; statement; paper; appraisal etc...)	

Detailed recommended revision(s) put forward by M&W officers:

We note that this year there is a 20% uplift for Sand and Gravel instead of the 50% included within the last LAA. There does appear to be reasonable justification for it within the LAA. We have no additional comments to make.

Somerset Council

"The Worcestershire Mineral Planning Authority area does not have any active crushed rock quarries (page 16, para 5.5) and relies on imports from other areas (page 20, para 6.4 & table 5). Table 7 (page 20) reports 733,000 tonnes of crushed rock was imported to Worcestershire (data source: Annual Mineral Survey 2019). No data is provided on MPA sources but crushed rock inter-regional flows are illustrated in Figure 3 on page 19. This indicates some exports of crushed rock from the South West region to the West Midlands.

Whilst there are no crushed rock imports from Somerset to Worcestershire (Somerset Local Aggregate Assessment, seventh edition, data to 2021: Monitoring (somerset.gov.uk), see table 5 (page 37) reporting 57 tonnes of crushed rock exported from Somerset to the West Midlands in 2019, all to Herefordshire), where data is available from AMS2019 (and any subsequent AMS surveys) at MPA level, it may be helpful for the Worcestershire LAA to report the origin and quantities of crushed rock imports to aid ongoing discussions with the relevant Mineral Planning Authorities."

Worcestershire County Council Response

Additional data on the number of operational sites

Staffordshire County Council felt it would be helpful to include data of the number of operational sites for each year of annual sales as listed in Table 2 so that the

impact of the new Minerals Local Plan can be monitored in the longer-term. The table has been updated to include this information.

20% uplift

We note support for the 20% uplift from Gloucestershire County Council and the questions from Staffordshire County Council about how sustainable the 20% uplift is over the plan period.

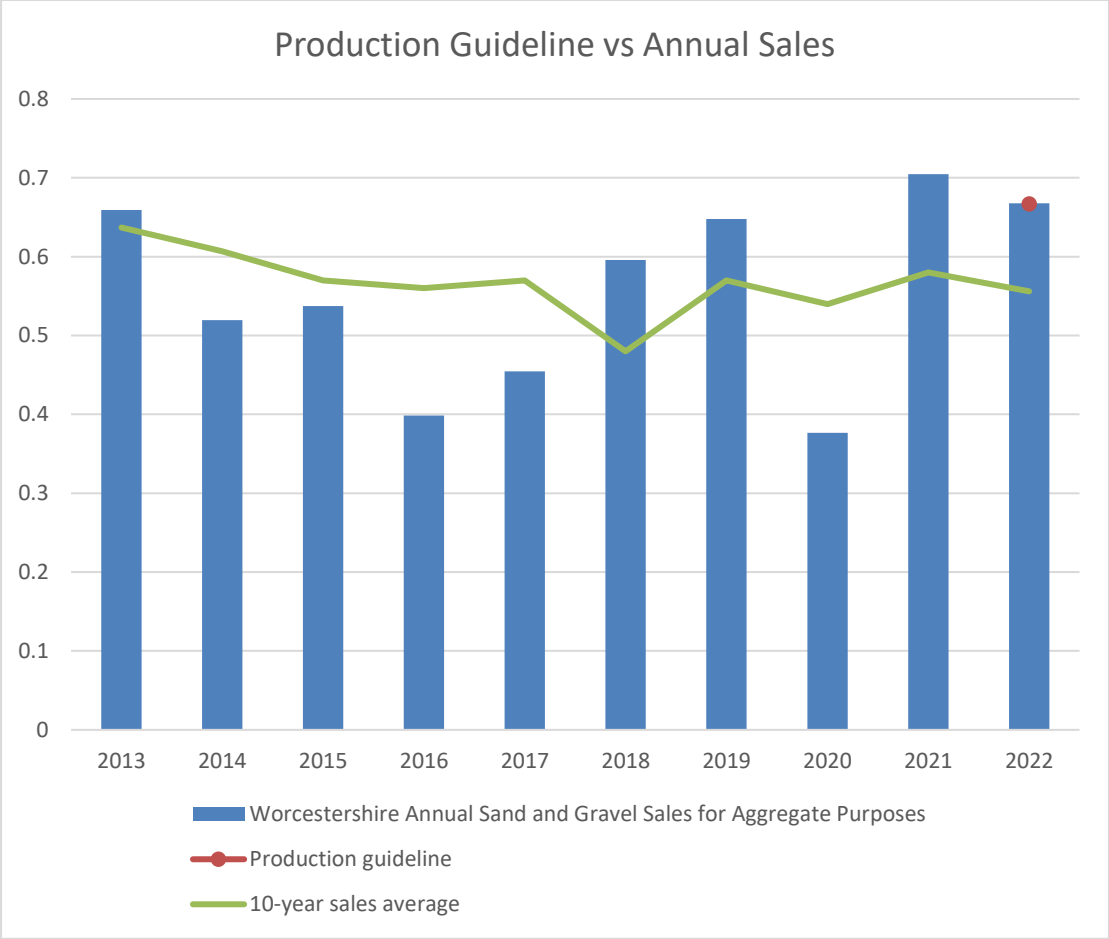
We note that the production guideline is greater than the baseline level of provision of 572,000 tpa made in the Mineral Local Plan. However, the Minerals Local Plan was developed in expectation that the annual production guideline would vary over the life of the plan, and was designed to be sufficiently flexible to allow for this (see Policy MLP 14 which explicitly states that "the production guideline and levels of permitted reserves will vary over the life of the Minerals Local Plan", and paragraph 5.14 which states that "the Minerals Local Plan has been developed to be sufficiently flexible to adapt to changes in the production guideline, but the baseline Local Aggregate Assessment provides a good indication of the likely minimum scale of provision required for sand and gravel over the life of the plan").

Worcestershire County Council considers that, in this Local Aggregates Assessment, a 20% uplift is justified and sustainable based on consideration of the rolling average of 10 years' sales data and other relevant local information, as well as an assessment of all supply options, given that:

- the production guideline in this LAA of 0.667 million tonnes is comparable to 2022 sales which were also 0.667 million tonnes.
- the production guideline is also responsive to the fact that sales in 4 out of the last 5 years were 13%-22% higher than the 10 year sales average (as shown in Figure 6 which illustrates the current production guideline of 0.667 against historic sales).
- there are current permitted reserves of 5.06 million tonnes (landbank 7.59 years). There is also additional market interest with four sand and gravel applications pending determination as of 31st December 2022, with a combined potential resource of 4.475mt. In addition, pre-application discussions were held with regard to two further potential sand and gravel sites during 2022.
- the Minerals Local Plan (2018-2036) contains policies to enable both new mineral development and extensions to existing sites, and it allocates 100 areas of search for sand and gravel (70 for terrace and glacial sand and gravel resources, and 30 for solid sand resources).

No changes have been made to the LAA in this respect, however the rolling average of 10 years' sales data and other relevant local information, as well as an assessment of all supply options, will be kept under review and the production guideline set accordingly in future LAAs.

Figure 6 Comparison of Historic production guideline and historic sales



Imports and Exports

It is difficult to identify trends in imports and exports of aggregates for Worcestershire, especially as the data limitations with the Aggregate minerals survey for England and Wales 2014 mean that it is not comparable with the Aggregate minerals survey for England and Wales 2019. In addition, the Aggregate minerals survey for England and Wales 2019 does not include sufficient detail to report the origin and quantities of crushed rock imports into Worcestershire.

No changes have been made to the LAA in this respect, however if this information in provided as part of the anticipated AMS 2023 then it will be considered in future LAAs.

Appendix 2: Demand and supply indicators agreed by West Midlands Aggregate Working Party

Table A. Indicators to be used in LAAs (some may be dependent on availability/quality of data) as agreed by West Midlands Aggregate Working Party, October 2021

No.	Indicator	Type of information	Demand or supply indicator
1	Gross housing completions (refer to MHCLG live tables on housing supply), compared with housing targets	Set over the past 10 years, or a shorter time period. Targets from up to date local plan and/or Government's standard methodology	Demand indicator
2	Employment land completions, compared with requirements	Strategic local plan employment allocations only. Info from AMRs or Employment Land Reviews. Timeline: over local plan period to date.	Demand indicator
3	Large scale local infrastructure requirements compared with delivery (refer to local strategic Plans and National Highways website)	e.g. new roadbuilding. Check local development plans, LEPs, local transport plans etc.	Demand indicator
4	NSIPs and other major projects (refer to National Infrastructure Planning website)	Either in mineral planning authority area or nearby e.g. HS2 or Commonwealth Games Note that developers should be encouraged to provide materials audits which could be used to predict "significant future	Demand indicator

No.	Indicator	Type of information	Demand or supply indicator
		increases in demand that can be forecast with reasonable certainty" (refer to PPG)	
5	3-year aggregate sales average	Caveat: Although this indicator may give figures for most recent sales, it may include unnatural fluctuations or major anomalies (e.g. due to Covid) and therefore may not be relied upon in such instances	Demand indicator
6	Sub-regional apportionment figures	Useful for comparison and context	Demand indicator
7	Quality and/ or capacity constraints of existing permitted reserves	Compare data for the overall potential permitted capacity of sites with the level of provision made in the MLP and/ or with current 10 years sales average. Consider projection of comparison over next 10 years or over remaining period of 'time horizon' of MLP.	Supply indicator
8	Windfall minerals permissions/trends	Could high levels of windfall permissions mean that these sites should have been included in local plan allocations? Or, could this indicate that the minerals industry prefer to bring sites forward though planning applications, rather than through the local development plan process?	Supply indicator

No.	Indicator	Type of information	Demand or supply indicator
9	Progressive exhaustion of permitted reserves over Plan period and permitted lifespans of productive sites.	a) Compare sales against data on the number of operational sites and new permitted reserves (assess replenishment rates). b) Record the number of sites that have ceased production of aggregates and comment on reasons for cessation if possible. c) Record cessation dates for mineral production at permitted sites. d) Highlight sites where the MLP includes allocations for the extension of existing sites and the potential duration of continued production from allocated sites.	Supply indicator
10	Transport constraints affecting markets for aggregates	e.g. lack of rail freight opportunities Note output restrictions on permitted sites (number of lorry movements/ tonnages).	Supply indicator
11	Levels of imports and exports	Data is not always complete/reliable.	Demand/Supply indicator, depending on movements into or out of the area

No.	Indicator	Type of information	Demand or supply indicator
		Review data from AM Survey 2019 and compare with AM 2014	
12	Limited geological reserves	Generalised; not specific to particular permitted quarry operations Note LUC study for previous regional apportionment which considered the extent of aggregate resources and its constraint by international/ national designations for the environment or culture.	Supply indicator
13	Local plan allocations	See d) for 9 above.	Supply indicator
14	Contribution from alternative aggregates	Record permissions for: New / extended waste facilities with capacity for producing recycled aggregate. New/ extended facilities for producing secondary aggregate from industrial by products. Permissions for major development involving redevelopment of previously developed land involving demolition/ land clearance works.	

Note: trend based data should be used where possible, with the intention that percentage figures on how far to deviate from the 10-year average can be explained/justified.