

# *Minerals Local Plan Background Document*

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## *Worcestershire Local Aggregate Assessment*

**Data covering the period up to  
31/12/2020**

*February 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.

## Substitute, secondary and recycled aggregates

- 1.2. 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

- 1.3. There are two distinct types of sand and gravel deposits in Worcestershire: the bedrock deposit solid sands of the Kidderminster Formation and Wildmoor Sandstone Formation, and the surface river terrace deposits of the rivers Severn and Avon and glacial deposits found in association with boulder clay.
- 1.4. Indicators of increasing demand suggest that the production guideline for primary sand and gravel should vary from the 10-year average shown in the LAA dashboard below. It is therefore proposed to deviate from the 10-year sales average by +50%.
- 1.5. This uplift is considered to be appropriate after assessing Worcestershire's ability to supply sand and gravel as resources exist, the emerging Minerals Local Plan proposes to allocate a significant number of areas of search, and there is significant interest in bringing sites forward shown by the minerals industry in response to "calls for sites" for allocation in a Mineral Site Allocations Development Plan Document, as well as a number of pre-application discussions and planning applications under consideration. However, there are some concerns in relation to continuity of supply in the near future due to the low landbank of remaining permitted reserves and the permitted timescale of some existing sites.
- 1.6. **The annual production guideline for sand and gravel identified by this Local Aggregates Assessment is therefore 0.853 million tonnes.**
- 1.7. Based on this production guideline and the stock of permitted reserves of 2.504 million tonnes, **Worcestershire had a landbank of 2.94 years at 31st December 2020.**

- 1.8. This is well below the 7-year landbank required by national policy and indicates that there is currently a shortfall of permitted reserves in the county.

## Crushed rock

- 1.9. 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"<sup>1</sup>, the Ordovician "Lickey Quartzite Formation"; and the Jurassic "Inferior Oolite Group".
- 1.10. Worcestershire has no permitted reserves, no productive capacity and no landbank for crushed rock. However, 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, and 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.
- 1.11. 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 emerging Minerals Local Plan will provide increased certainty and policy support for crushed rock development in Worcestershire, there are significant constraints on Worcestershire's crushed rock resources, and 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.
- 1.12. **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.**
- 1.13. 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 has been discussed in detail with the West Midlands, East Midlands, South West and South Wales Aggregate Working Parties, and Worcestershire County

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<sup>1</sup> 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](http://www.worcestershire.gov.uk/mineralsbackground))

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
<b>Production (demand): 2019 sales</b>	0.648 million tonnes ↑	0 tonnes
<b>Production (demand): 2018 sales</b>	0.596 million tonnes ↑	0 tonnes
<b>Production (demand): 3-year average sales (mean)</b>	0.570 million tonnes ↑	0 tonnes
<b>Production (demand): 10-year average sales (mean)</b>	0.569 million tonnes ↑	0 tonnes
<b>Production (demand): 'Baseline' production guideline identified in adopted Minerals Local Plan</b>	N/A	N/A
<b>Production (demand): Annual Production Guideline</b>	<b>0.853 million tonnes ↑</b>	<b>Unable to be calculated, however is explicitly greater than 0 tonnes.</b>
<b>Production (demand): Informatives</b>	Production guideline based on 10-year average plus 50% due to indicators of demand, including recent levels of sales and estimated impact of HS2 on the total West Midlands supply, suggesting a significant deviation is from the 10-year average is appropriate.	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.
<b>Landbank (Supply): Permitted Reserves at 31<sup>st</sup> December 2020</b>	2.504 million tonnes ↓	0 tonnes ↓
<b>Landbank (Supply): Number of sites at 31<sup>st</sup> December 2020</b>	3 active sites ↓	0 sites
<b>Landbank (Supply): Landbank at 31<sup>st</sup> December 2020 (based on annual production guideline)</b>	<b>2.94 years ↓</b>	<b>0 years</b>
<b>Landbank (Supply): Landbank requirement</b>	7.00 years ✖	10.00 years

	<b>Sand and gravel</b>	<b>Crushed rock</b>
<b>Landbank (Supply): Informatives</b>	<p>0% of reserves are held in inactive sites.</p> <p>Six applications for new mineral extraction sites were submitted or under consideration in 2020.</p> <p>Worcestershire is a net-exporter of sand and gravel.</p> <p>Sufficient sand and gravel resources exist in Worcestershire and evidence of interest from minerals industry suggest a significant increase above the 10-year average can be accommodated.</p>	<p>Crushed rock resources exist in Worcestershire, but there are no current permitted reserves.</p> <p>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.</p> <p>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 reduced to 0 tonnes, but with the emerging 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.</p> <p>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.</p>

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## 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 (2021), paragraph 209

- 2.1. The National Planning Policy Framework<sup>2</sup> 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 (Minerals Local Plan and Mineral Site Allocations Development Plan Document) and will be a material consideration in the determination of planning applications.
- 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 January 2022, and their comments have been taken in to account in the final report (see Appendix 1: Consultation with Aggregate Working Parties).

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<sup>2</sup> Ministry for Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 213



## Next steps

- 2.4. The Local Aggregate Assessment will be updated annually in consultation with the West Midlands Aggregate Working Party (WM AWP) and other AWP's as required, and will be published by the Council alongside the Minerals and Waste Local Development Scheme Authority Monitoring Report (AMR). The current and previous AMRs and LAAs are available on [www.worcestershire.gov.uk/AMR](http://www.worcestershire.gov.uk/AMR). If you would like to be notified when new AMRs are published please contact [minerals@worcestershire.gov.uk](mailto:minerals@worcestershire.gov.uk) providing your contact details<sup>3</sup>.

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<sup>3</sup> See [http://www.worcestershire.gov.uk/info/20014/planning/1156/get\\_involved\\_in\\_planning](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*".<sup>4</sup>

#### 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 Local Plans rather than the Minerals Local Plan.
- 3.3. There is no data available to indicate the level of contribution made by substitute materials in Worcestershire, but if use of substitutes increased and leads 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 2020 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.<sup>5</sup> This plant produces approximately 40,000 tonnes per annum of Incinerator Bottom Ash which is capable of being used as secondary aggregate, although further processing is required to enable this.
- 3.1. In addition, an Incinerator Bottom Ash Processing and Recovery Facility at Hill and Moor Landfill Site commenced operation in 2017. This facility is tied to the life of the Hill and Moor Landfill Site and is limited to processing 50,000 tonnes per annum of Incinerator Bottom Ash, which currently comes from EnviRecover. Incinerator Bottom Ash Aggregate from this facility is used under the following Environment Agency Regulatory Position Statement RPS 247<sup>6</sup>. The process of obtaining End of Waste

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<sup>4</sup> Ministry of Housing Communities and Local Government (July 2018) *National Planning Policy Framework*, paragraph 204(b)

<sup>5</sup> Further information about the development of the Energy from Waste Plant can be viewed at <http://www.severnwaste.com/recovery/envirecover-project/>

<sup>6</sup> RPS 247: Using unbound incinerator bottom ash aggregate (IBAA) in construction activities available at: <https://www.gov.uk/government/publications/using-unbound-incinerator-bottom-ash-aggregate-ibaa-in-construction-activities-rps-247/using-unbound-incinerator-bottom-ash-aggregate-ibaa-in-construction-activities-rps-247>

Criteria to use the recovered IBAA in block manufacture has also commenced.

## Recycled aggregates

- 3.2. 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.
- 3.3. The supply of recycled materials will depend on the county's capacity to process these materials. The Waste Core Strategy<sup>7</sup> sets targets for capacity at static plant, but due to data limitations it is not possible to monitor the role of mobile plant.
- 3.4. There are no reliable assessments of C&D arisings, and there are no set approaches for making estimates about waste arisings or projecting waste growth for C&D waste, either nationally or locally. The method used to establish projections in the Waste Core Strategy assumes 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 arisings of C&D waste in Worcestershire based on this approach are set out in Table 1.

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

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

- 3.5. 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, including 3 which amended their planning permission between 2018-2020, received approximately 116,000 tonnes of inert waste for treatment in 2020 across 10 sites, with a further 105,000 tonnes received for transfer across 20 sites.<sup>8</sup> It is not currently possible to assess the proportion of this which was subsequently sold or used as recycled aggregate.

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<sup>7</sup> The Waste Core Strategy for Worcestershire was adopted in November 2012. The relevant documents are available to view on [www.worcestershire.gov.uk/wcs](http://www.worcestershire.gov.uk/wcs).

<sup>8</sup> Environment Agency Waste Data Interrogator 2020, 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.

- 3.6. 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.
- 3.7. Worcestershire does not have any rail depot 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**

- 3.8. Despite the current lack of information on the level of use of secondary and recycled materials locally, these account for 28% of the total market nationally.<sup>9</sup>
- 3.9. We are not aware of any other potential drivers that would result in significant increases in arisings or recovery for recycled or secondary aggregate materials. We also have no evidence to indicate whether Worcestershire is likely to produce any more or any less than the national average.
- 3.10. The Mineral Products Association's evidence to the examination in public of the Staffordshire Minerals Local Plan in 2016 states 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 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."*<sup>10</sup>

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<sup>9</sup> 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](https://mineralproducts.org/MPA/media/root/Publications/2021/Profile_of_the_UK_Mineral_Products_Industry_2020_Spread.pdf)

<sup>10</sup> 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 in the

- 3.11. The Minerals Local Plan will give (and the Waste Core Strategy already gives) policy encouragement to increasing the use of secondary and recycled materials. However, the lack of data will make 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.
- 3.12. 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.

## 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
  - Surface deposits: river terrace deposits of the rivers Severn and Avon and glacial deposits found in association with boulder clay.
- 4.2. The solid sands, river terrace and glacial deposits will be considered collectively under the term “sand and gravel” in the rest of this report.<sup>11</sup>

### Impact of the Coronavirus pandemic

- 4.3. 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 representative baseline indication of demand by averaging out economic peaks and troughs.
- 4.4. The COVID-19 pandemic resulted in enforced shutdown of large sections of the UK economy.
- 4.5. Sales of sand and gravel from Worcestershire in 2020 were 0.377 million tonnes, considerably lower than the 0.596 million tonnes sold in the previous year (2019) which was unaffected by the COVID-19 pandemic.
- 4.6. It is therefore not considered to be appropriate to rely on 2020 sales figures in the baseline 10 year sales average in this document due to the impact on sales figures being beyond that which can be considered a “usual” fluctuation in market demand.

### 10 years sales average

- 4.7. 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.
- 4.8. Table 2 and Figure 1 show the levels of sand and gravel sales in Worcestershire and Herefordshire over the 10 year period from 2010 to 2019. Worcestershire's data was combined with Herefordshire in 2012 and 2013 due to issues of commercial confidentiality<sup>12</sup>. Permission was given by

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<sup>11</sup> 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](http://www.worcestershire.gov.uk/mineralsbackground)

<sup>12</sup> 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

the affected operator in Herefordshire to enable the data to be shown separately again from 2014.

4.9. The most recent representative data available is for 2019.<sup>13</sup>

**Table 2. Sand and gravel sales 2010 – 2019 (million tonnes)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Worcestershire	0.62*	0.63*	-	-	0.520*	0.538	0.399	0.455	0.596	0.648
Herefordshire & Worcestershire Combined			0.62*	0.659*						

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.

4.10. In 2019, sales of sand and gravel in Worcestershire were 0.648 million tonnes, an increase from 0.596 million tonnes in 2018. This is the highest figure since 2008<sup>14</sup> and means sales have increased significantly in each of the last 3 years. In addition, sales have increased in 4 of the last 5 years, with the only reduction being 2016, when the lower level of sales is likely to be due to the fact that a number of sites were ceasing production and new permissions were being implemented but were not fully operational for the entirety of the year.

4.11. The 10-year average of sales from 2010-2019 including combined data for 2012-13 is 0.569 million tonnes. This is 14% **lower** than the 2019 sales figure.

4.12. The 10-year average has a number of 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;
- it incorporates combined data with Herefordshire which could skew the average;<sup>15</sup>
- the adopted Minerals Local Plan 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.

4.13. In addition, the fact that the 10-year average is below the 2019 sales figure may mean that it could under-represent current market demand. Therefore, whilst the 10-year average is considered to be the best starting

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permission is given by the operators affected. From 2012 onwards there has been fewer than 3 operational sites in Herefordshire.

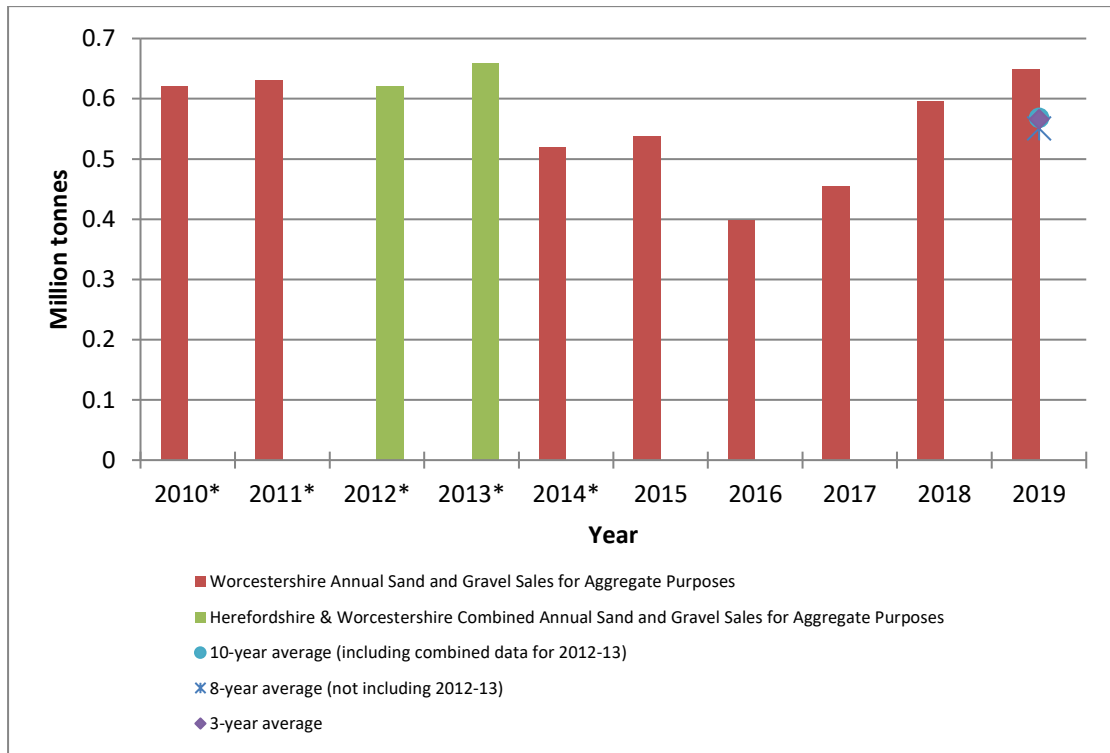
<sup>13</sup> Although sales data for 2020 is available, it is not considered representative of the normal functioning of the economy due to the impact of COVID-19 "lockdowns", and has therefore not been included in the 10 year sales average in this document.

<sup>14</sup> Excluding 2013 when figures were combined with Herefordshire.

<sup>15</sup> If we were to discount the combined data for 2012 and 2013, the average over the 8 remaining years between 2011-2020 is 0.541 million tonnes.

point, this needs to be considered alongside other indicators of demand and supply, as set out below.

**Figure 1. Sand and gravel annual and average sales 2010-2019**



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



## 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: <sup>16</sup>
- The Precambrian "Malverns Complex" and "Warren House Formation";
  - The Silurian "Woolhope Limestone Formation"<sup>17</sup>;
  - The Ordovician "Lickey Quartzite Formation"; and
  - The Jurassic "Inferior Oolite Group".
- 5.2. These Precambrian, Silurian, Ordovician and Jurassic deposits will be considered collectively under the term "crushed rock" in the rest of this report.

### 10 year sales average

- 5.3. 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.
- 5.4. Table 3 shows the levels of crushed rock sales in Worcestershire over the last 10 years (2011-2020). Worcestershire's last crushed rock site ceased working and has been undergoing restoration since 2010.

**Table 3. Crushed rock sales 2011 – 2020 (million tonnes)**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Worcestershire	0	0	0	0	0	0	0	0	0	0

Source: West Midlands Regional Aggregate Working Party Annual Reports.

- 5.5. In each of 2018, 2019 and 2020, sales of crushed rock in Worcestershire were 0 tonnes.
- 5.6. As no crushed rock sales have been recorded in any of the last 10 years, the 10-year average of sales from 2010-2019 is 0 tonnes.
- 5.7. 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, as set out below.

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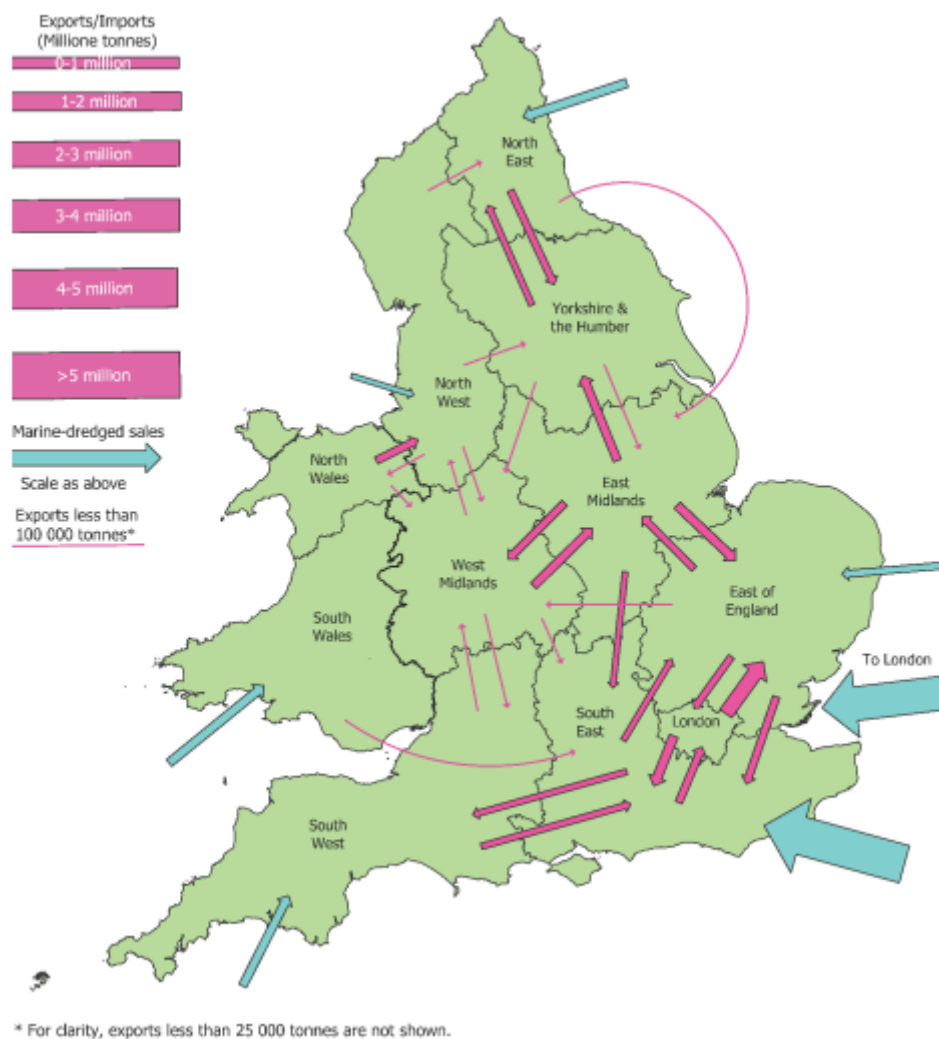
<sup>16</sup> For further information about the nature, location and potential significance of the deposits see background document *Analysis of Mineral Resources in Worcestershire* at [www.worcestershire.gov.uk/mineralsbackground](http://www.worcestershire.gov.uk/mineralsbackground)

<sup>17</sup> 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](http://www.worcestershire.gov.uk/mineralsbackground))

## 6. Primary Aggregates: Imports and Exports

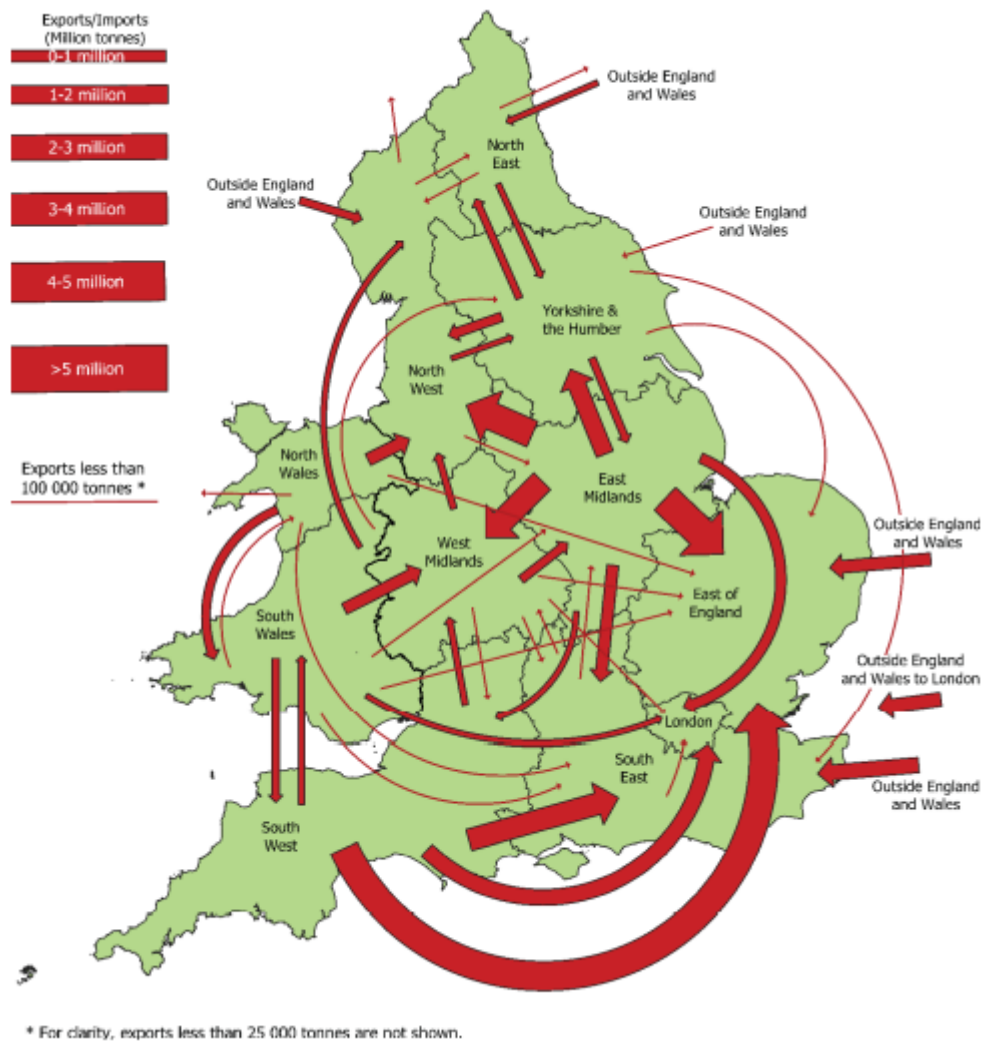
6.1. The only source of information about the flows of imports and exports of primary aggregates is the *Aggregate minerals survey for England and Wales*. This survey is undertaken every 4 or 5 years and one aspect that it considers is the movement of material. It sets out information relating to the 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**



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).

6.2. 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. 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,<sup>18</sup> 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.

6.3. Whilst the sales figures for Worcestershire shown in Table 2 and Table 3 should therefore be considered to be more reliable, the aggregate minerals survey data is the only information available to understand the likely scale and balance of imports and exports. This allows some understanding of the

<sup>18</sup> Email correspondence with Mr T Bide at the British Geological Survey (7<sup>th</sup> August 2017) revealed that for 2009 responses were only received for two quarries in Worcestershire, and in 2014 for only 1 quarry.

total consumption of primary aggregates in Worcestershire (i.e. the scale of demand to supply the need within the county). 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, whether there are net imports (which would indicate that demand in the county is higher than the amount sold), or whether there are net exports (which 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.

6.4. 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.

6.5. 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. No sales data is presented for crushed rock as there were no sales recorded from Worcestershire during this period in the Aggregate Minerals Survey<sup>19</sup>, and as an inland county, Worcestershire does not produce marine sand and gravel.

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

<b>Year</b>	<b>Tonnes sold within the following destination: Worcestershire</b>	<b>Tonnes sold within the following destination: West Midlands</b>	<b>Tonnes sold within the following destination: Elsewhere</b>	<b>Total</b>
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.

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<sup>19</sup> 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 sales for 2009 shown in Table 2 of this document may have been attributable to Worcestershire.

**Table 5. Imports of primary aggregates in to 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.

**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)

6.6. Worcestershire does not have any rail depot 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.

## 7. Primary Aggregates: Demand Indicators

### Total consumption

- 7.1. The amount of primary aggregate consumed within Worcestershire each year would represent the demand for resources within the county.
- 7.2. Subject to the caveats regarding the reliability of the data outlined in Section 6 above, total consumption for the county can be calculated by combining data which is available for Worcestershire in the *Aggregate minerals survey for England and Wales* for 2009, 2014 and 2019 relating to the total amounts produced and then sold within Worcestershire, with the amounts imported into Worcestershire, as shown in Table 7 below.

**Table 7. Total consumption of primary aggregates in Worcestershire**

	<b>Sales within Worcestershire (tonnes)</b>	<b>Combined imports of primary aggregates (tonnes)</b>	<b>Total consumption (tonnes)</b>
2009	114,000	250,000	364,000
2014	51,000	688,000	739,000
2019	287,000	838,000	1,125,000

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. This data is not available on an annual basis, and the significant concerns about the reliability of this data mean that very little weight can be given to the apparent change in the scale of consumption from 2009-2019. However, this data does provide the best available indication of the overall scale of demand for primary aggregates within Worcestershire.

### 3-year sales average

- 7.4. As data for total consumption is not available on an annual basis and in any case would not reflect Worcestershire's contribution to the Managed Aggregate Supply System through the amounts exported, consideration must be given to trends in the amounts sold annually. An average of the last 3 years sales gives an indication of the most recent trend in demand.
- 7.5. For sand and gravel, the 3-year average from 2017-2019 is 0.570 million tonnes. This is almost exactly the same as the 10-year average (0.4% higher) and may therefore indicate that the 10-year average figure is representative of current levels of demand.
- 7.6. However, the 3-year average is 14% lower than the 2019 sales figure, and the trend across these years has been for sales to increase rather than being static at around this level. This may therefore indicate that the 3-year average could be an under-representation of the current and potential future market demand.
- 7.7. For crushed rock, the 3-year average from 2018-2020 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.

### 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*.<sup>20</sup> 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 yet been published by government.
- 7.9. The sub-regional apportionment for sand and gravel of 0.871 million tonnes was 34% higher than the 2019 sales figure, and is 53% 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,<sup>21</sup> 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."
- 7.12. However, discussion during the examination hearing sessions for Worcestershire's Minerals Local Plan in November-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. This will be assessed alongside other indicators in the conclusion (Section 9).
- 7.13. 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 the conclusion (Section 9).

## Anticipated levels of development

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<sup>20</sup> Department for Communities and Local Government  
<https://www.gov.uk/government/publications/national-and-regional-guidelines-for-aggregates-provision-in-england-2005-to-2020>

<sup>21</sup> 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>

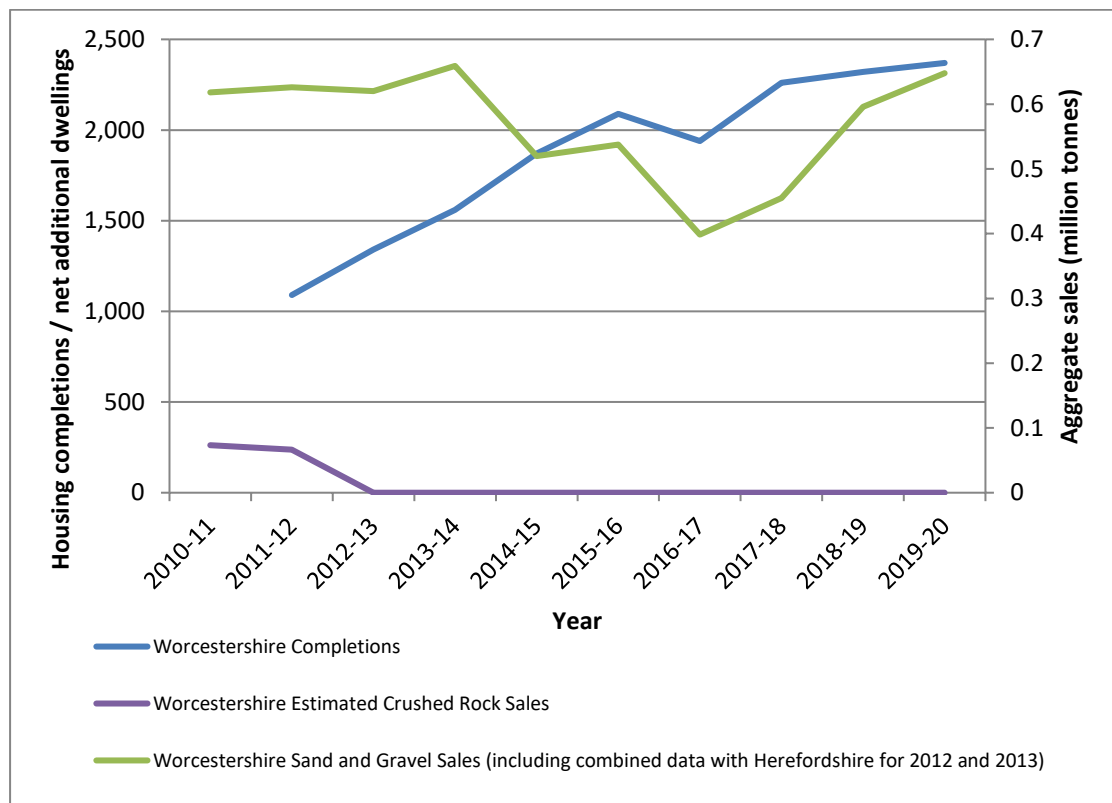
7.14. Considering levels of planned development could provide an indication of whether demand for aggregates is likely to significantly increase or decrease, warranting an adjustment in the production guidelines.

**Housing development**

7.15. 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.

7.16. Figure 4 shows aggregate sales against housing completions in the county over the last 10 years.

**Figure 4. Aggregate sales versus housing completions<sup>22</sup>**



7.17. Figure 4 shows that the level of housing completions has varied annually over the last 10 years (between 1,090 and 2,370), with an average of 1,871

<sup>22</sup> 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)). <https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building>. Dataset incomplete for 2009-10 and 2010-11.



completions per year,<sup>23</sup> and a trend in the number of completions increasing over this period. Over the next 10 years, the anticipated level of housing provision in adopted Local Plans is approximately 2,218 dwellings per year.<sup>24</sup> This would represent a 19% increase in comparison to the average over the last 10 years but is below the number completed in any of the three most recent years (2260 in 2017/18, 2320 in 2018/19 and 2370 in 2019/20).

7.18. A number of Local Plans 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, with delivery being maintained at an average of 2047 houses per annum<sup>25</sup>. This is 10% higher than the average number of completions seen over the last 10 years, but is 10% lower than the average number of completions seen over the last 3 years (2316 completions per year).

7.19. Figure 4 does not show a direct correlation between the number of housing completions and the level of either sand and gravel or crushed rock sales in Worcestershire in any given year. Nonetheless, it is useful to consider the likely level of aggregate required per house as an indication of the likely sufficiency of production from the county.

7.20. A typical new house uses 200 tonnes of aggregate, or up to 400 tonnes of aggregate when supporting infrastructure, such as access roads, is taken into account.<sup>26</sup> This does not distinguish between use of sand and gravel and crushed rock, and does not include any indication of the likely level of demand for material used in maintaining or refurbishing existing housing stock, but does enable calculations to be made of the likely scale of demand for aggregate for new housing development.

7.21. Based on average material usage per dwelling, new housing development may account for between 65.7% and 81.4% of the 10-year average amount of sand and gravel produced in Worcestershire, when supporting infrastructure is not included, or between 131.5% and 162.7% of the 10-year average amount of sand and gravel produced in Worcestershire when supporting infrastructure is also taken into account.<sup>27</sup>

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<sup>23</sup> 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)). <https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building>. Dataset incomplete for 2009-10 and 2010-11.

<sup>24</sup> Based on figures in South Worcestershire Development Plan (2016), Wyre Forest Core Strategy (2010), Bromsgrove District Plan (2017), and Borough of Redditch Local Plan No.4 (2017).

<sup>25</sup> 2047 houses per annum calculated using the Standard Methodology from Government released in December 2020.

<sup>26</sup> 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](https://www.mineralproducts.org/MPA/media/root/Publications/2021/Profile_of_the_UK_Mineral_Products_Industry_2021.pdf)

<sup>27</sup> See *Appendix 3: Calculation of aggregate demand for housing development* for more information.

- 7.22. However, despite being a net-exporter of sand and gravel, Worcestershire is a net importer of aggregate minerals once the levels of imports of crushed rock are taken into account. Housing development and associated infrastructure may have accounted for between 66.5% and 82.7% of Worcestershire's total aggregate consumption in 2019<sup>28</sup>, and it is highly likely that Worcestershire's housebuilding is currently reliant on imports of primary materials.
- 7.23. The anticipated trajectory for new housing development in emerging local plans and the government's Standard Methodology both indicate that the number of dwellings required per year in future is higher than the average delivered over the last 10 years, but lower than those delivered in the last three years.
- 7.24. Demand for primary minerals to enable new housing development will be considered together with other indicators in the conclusion (Section 9).

### **Employment development**

- 7.25. 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 details. Therefore, complete data is unable to be collated for use in identifying trends in demand. However, it is recognised that there is demand for employment developments, and therefore demand for aggregates to meet this.
- 7.26. A total of 767ha of land is currently allocated for employment use across Worcestershire<sup>29</sup>. Due to the differing timescales between plan periods, the delivery of these sites is likely to take place over differing timescales.
- 7.27. Some employment allocations will have already been approved and implemented, this is likely largely to be covered in existing sales data, however we are unable to quantify whether this demand is likely to increase or decrease.
- 7.28. The MPA profile of the UK mineral industry document gives estimated figures of the amount of mineral products needed for different types of employment developments, this includes:
- 16,480 tonnes of concrete for a 6 storey city centre office building
  - 53,000 tonnes of concrete for a community hospital
  - 15,000 tonnes of concrete for a school
  - 730,000 tonnes of asphalt for an example road (A14 Cambridge to Huntingdon Improvement Scheme)
- 7.29. This information cannot be directly applied in calculations of demand arising for employment land development, due to the wide variation in

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<sup>28</sup> See *Appendix 3: Calculation of aggregate demand for housing development* for more information.

<sup>29</sup> Made up of 640ha allocated in the South Worcestershire Development Plan, 55ha in the Redditch Local Plan, 44ha in the Wyre Forest Local Plan and 28ha in the Bromsgrove District Plan.

tonnages required for differing schemes, and the lack of robust data available in Worcestershire regarding delivery trajectories.

### **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, 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.
- 7.31. There are no Nationally Significant Infrastructure Projects planned or underway within Worcestershire.<sup>30</sup> 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. Failing to make adequate provision to meet this increased demand could compromise the ability for both HS2 and other developments to be delivered.
- 7.32. Construction work on HS2 has begun in recent years, and evidence is beginning to appear confirming the AWP's views regarding aggregate supply and possibly shortages.
- 7.33. The West Midlands Aggregate Working Party has been seeking to work closely with HS2 to better understand the implications for minerals supply from the West Midlands. The latest figures supplied to the West Midlands AWP by HS2 indicate that between now and 2027, HS2's demand for resources from within the West Midlands may be approximately 50% of current production levels. Therefore, in order to also continue supplying existing markets, production in the West Midlands region will require a 50% increase to meet the extra demand placed upon the region by HS2.
- 7.34. Hudson Contract, 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, reported in April 2021 that its clients are reporting serious shortages in construction products, suggesting that this is likely to be due to materials instead supplying HS2, that the risks around availability of materials are the main threat to their growth prospects, and that

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<sup>30</sup> 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.

the problem with the lack of building materials is most acute in the West Midlands.<sup>31</sup>

7.35. Whilst Worcestershire is some distance from the line of the HS2 development, and therefore unlikely to directly supply it, additional aggregate extraction in Worcestershire is likely to be needed in order help meet the demands placed upon aggregate supply chains in the West Midlands. It is difficult to quantify the extent of additional provision required from Worcestershire, but this will be considered alongside other indicators in the conclusion (Section 9).

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<sup>31</sup> <https://www.theconstructionindex.co.uk/news/view/hs2-blamed-for-materials-shortages?amp=1&s=03>

## 8. Primary Aggregates: Ability to Supply

### Indigenous supply

#### 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<sup>3</sup> for sand and gravel.
- 8.5. Worcestershire County Council (WCC) has since undertaken its own analysis of the mineral resources in the county.<sup>32</sup> 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<sup>3</sup> for sand and gravel 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,

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<sup>32</sup> Worcestershire County Council (August 2016) *Worcestershire Minerals Local Plan Background Document: Analysis of Mineral Resources in Worcestershire*, available from the archive page at [www.worcestershire.gov.uk/mineralsbackground](http://www.worcestershire.gov.uk/mineralsbackground).

and that constraints which will be set out in criteria-based policies have not been applied within the analysis of resources. Further work has since been completed to screen out international and national designations.<sup>33</sup>

8.6. A comparison between the two estimates can be seen in table 3 below.

**Table 8. Comparison between LUC and WCC estimates of Worcestershire's sand and gravel resources**

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

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.

***Extant sites and permitted reserves (sand and gravel)***

8.9. Three sand and gravel sites in Worcestershire shown in Table 9 were "active" (in production for some time during the year) during 2018-2020. As of 31<sup>st</sup> December 2020, all three of the active sites had permitted reserves of sand and gravel for aggregate purposes.

8.10. A fourth site, Pinches 3, was not "active" during 2018-2019 (i.e. it was not producing sand and gravel) but was undergoing restoration in line with its planning permission which had an end date of 30<sup>th</sup> November 2019. As of the end of 2019 it therefore no longer had permitted reserves of sand and gravel.

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<sup>33</sup> Worcestershire County Council (November 2018) *Worcestershire Minerals Local Plan Background Document: Analysis of Mineral Resources in Worcestershire*, available from the mineral resources page at [www.worcestershire.gov.uk/mineralsbackground](http://www.worcestershire.gov.uk/mineralsbackground).

8.11. None of the sites active as of 31<sup>st</sup> December 2020 has conditions attached to its planning permission which would restrict the productive capacity of the site.

8.12. However, planning permission for one of the sites ends on 31<sup>st</sup> December 2026. 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 once the permission ends on 31<sup>st</sup> December 2026.

**Table 9. Sites with permitted reserves as of December 2020**

Site name	Company	Location	Planning permission end date	Limits imposed on productive capacity by planning permission
Cinetic Quarry (also known as Wildmoor Quarry)	Wildmoor Quarry Products Ltd	Sandy Lane, Wildmoor, Bromsgrove	None stipulated (therefore 2042)	None
Clifton	Tarmac	Clifton Arles Wood, Severn Stoke	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
Ryall's Court Quarry (extraction) / Ryall House Farm Quarry (processing)	Cemex UK Materials Ltd	Ryall's Court Quarry, Ryall Court Lane, Ryall, Upton-upon-Severn  Ryall House Farm, Tewkesbury Road, Ryall, Upton-upon-Severn	31 <sup>st</sup> December 2026 (stated on planning permission 15/000013/CM)  Proposals for decommissioning and restoration of Ryall House Farm Quarry <sup>34</sup> required by 31 December 2023, or within 3 months of the permanent cessation of working at Ryall's Court Quarry (stated on planning permission 15/000012/CM)	None

8.13. According to returns submitted by mineral operators in the county in response to the West Midlands Aggregate Working Party Annual Monitoring Survey, the total permitted reserves for sand and gravel in Worcestershire at 31<sup>st</sup> December 2020 was 2.504 million tonnes. This is equivalent to 4.4 years at the

<sup>34</sup> 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.

rate of the 10-year sales average, and is not sufficient to meet the requirements identified in the emerging Minerals Local Plan.

### ***Site allocations (sand and gravel)***

- 8.14. The adopted County of Hereford and Worcester Minerals Local Plan (1997) allocated a number of preferred areas for sand and gravel working in Worcestershire.
- 8.15. The site at Strensham, which was subject to planning application 09/000085/CM, withdrawn in 2017, is the last remaining allocated site for sand and gravel extraction within Worcestershire in the adopted Minerals Local Plan, other than the extension to Aston Mill, Kemerton, which is understood to have not been worked due to the quality and quantity of the mineral deposit, and part of the wider Ryall North site, which has planning permission (Application Ref: 15/000013/CM) for the majority of the Preferred Area allocation.
- 8.16. Information received from the minerals industry and Mineral Products Association suggests that some caution should be given to the remaining Preferred Areas in the adopted 1997 Minerals Local Plan: *"if allocations from that Plan are still outstanding it suggests that they are undeliverable and should not be relied on"*<sup>35</sup>.
- 8.17. In addition, economic uncertainty and the lack of an up-to date Minerals Local Plan have been expressed as concerns for the industry. The Minerals Local Plan and Mineral Site Allocations DPD are being developed to provide more certainty over mineral working in the county.
- 8.18. The Minerals Local Plan was under examination in public in 2020. Main modifications to the plan proposed through the examination process updated the figures for the scale of provision required, highlighting 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 in addition to the existing permitted reserves in the county.
- 8.19. The emerging Minerals Local Plan contains policies to enable both new mineral development and extensions to existing sites, and it proposes to allocate 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.
- 8.20. 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

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<sup>35</sup> Mineral Products Association comments on Minerals Local Plan Background Documents consultation, summer 2015 (response reference D024-1899)



isolated satellite operations which were not long term solutions.<sup>36</sup> However, a number of potential sites for sand and gravel extraction have now been proposed by the minerals industry and/or landowners and these sites are under consideration as potential sites for allocation in the Mineral Site Allocations Development Plan Document (DPD).

### ***Applications pending (sand and gravel)***

8.21. Six planning applications for new extraction sites were received in 2018-2020, these were:

- Application reference 18/000036/CM, to extract 1.35 million tonnes of sand and gravel from a new quarry on land adjacent to former Chadwich Lane Quarry, Bromsgrove.
- Application reference 19/000048/CM, to extract 1.5 million tonnes of sand and gravel from a new quarry at Bow Farm, Ripple.
- Application reference 19/000053/CM, to extract 3 million tonnes of sand and gravel from a new quarry at Lea Castle Farm, Kidderminster.
- 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 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.
- Application reference 20/000042/CM, to extract 300,000 tonnes of sand from a new quarry at Wilden Lane, Stourport-on-Severn.

8.22. Five of these applications are for sites which have also been put forward in response to calls for sites and are being considered for potential allocation in the Mineral Site Allocations DPD. All six proposals were pending determination as of 31st December 2020.<sup>37</sup>

8.23. No further mineral planning applications were made, decided or pending decision between 2018-2020.

### ***Pre-application discussions (sand and gravel)***

8.24. Between 2018 and 2020, pre-application discussions have been held with regard to five potential sand and gravel sites, including potential changes to existing sites. These discussions are confidential and may not result in planning applications being brought forward, but they indicate that there is interest in developing further sand and gravel workings in Worcestershire.

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<sup>36</sup> Mineral Products Association comments on Minerals Local Plan Background Documents consultation, summer 2015 (response reference D024-1899)

<sup>37</sup> Planning permission was granted on 25<sup>th</sup> March 2021 for application 18/000036/CM (land adjacent to former Chadwich Lane Quarry) and that permission has been implemented. Planning permission was refused on 29<sup>th</sup> September 2021 for application 20/000042/CM (Wilden Lane). At the time of drafting this document in January 2022, the remaining planning applications remain pending.

## 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/m<sup>3</sup> for hard rock.
- 8.29. Worcestershire County Council (WCC) has since undertaken its own analysis of the mineral resources in the county.<sup>38</sup> 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/m<sup>3</sup> 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

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<sup>38</sup> Worcestershire County Council (August 2016) *Worcestershire Minerals Local Plan Background Document: Analysis of Mineral Resources in Worcestershire*, available from the archive page at [www.worcestershire.gov.uk/mineralsbackground](http://www.worcestershire.gov.uk/mineralsbackground).

been applied within the analysis of resources. Further work has since been completed to screen out international and national designations.<sup>39</sup>

8.30. A comparison between the two estimates can be seen in Table 9 below.

**Table 10. Comparison between LUC and WCC estimates of Worcestershire's crushed rock resources.**

<b>Document estimating resource</b>	<b>Area of unsterilized resource (ha)</b>	<b>Volume of unsterilized resource (mt)</b>
<b>LUC</b>	508.98	427.58
<b>WCC Analysis of mineral resources (April 2021)</b>	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.

***Extant sites, permitted reserves and applications pending (crushed rock)***

8.33. There were no sites with permitted reserves of crushed rock during 2018-2020, 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.

***Site allocations (crushed rock)***

8.34. The adopted County of Hereford and Worcester Minerals Local Plan (1997) 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

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<sup>39</sup> Worcestershire County Council (November 2018) *Worcestershire Minerals Local Plan Background Document: Analysis of Mineral Resources in Worcestershire*, available from the mineral resources page at [www.worcestershire.gov.uk/mineralsbackground](http://www.worcestershire.gov.uk/mineralsbackground).

aftercare. There are therefore no remaining site allocations for crushed rock in Worcestershire in the adopted Minerals Local Plan.

- 8.35. The emerging Minerals Local Plan was under examination in public in 2020. Main modifications to the plan proposed through the examination process updated the figures for the scale of provision required, highlighting 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.
- 8.36. The emerging Minerals Local Plan contains policies to enable both new mineral development and extensions to existing sites. It does not propose to allocate any areas of search for crushed rock, but it includes criteria-based policies to enable crushed rock development on windfall sites, and proposed Main Modifications strengthen the policy support for crushed rock development within Worcestershire.
- 8.37. 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.

***Pre-application discussions (crushed rock)***

- 8.38. Between 2018 and 2020, no pre-application discussions have been held with regard to potential crushed rock sites. This is a strong indication that there is limited interest in developing crushed rock workings in Worcestershire in the immediate future.

## 9. Summary of Findings

9.1. Appendix 2: Demand and supply indicators agreed by West Midlands Aggregate Working Party shows the indicators which have been considered throughout this LAA, and the findings are summarised in relation to each indicator in Table 11 to Table 14 before conclusions are drawn about the productions guidelines which should be set for sand and gravel and crushed rock.

### Sand and gravel

9.2. Starting point: 10-year sales average for sand and gravel of 0.569 million tonnes, permitted reserves of 2.504 million tonnes.

**Table 11. Demand indicators for sand and gravel**

Indicator number	Demand indicator	Summary	Indication in relation to 10-year average
Demand / supply indicator (depending on movements into or out of the area)	Levels of imports and exports	<p>Data indicates that Worcestershire was a net exporter of sand and gravel in 2009, 2014 and 2019, but with the scale varying over these years and some concerns about the reliability of the data.</p> <p>This indicates that Worcestershire has been able to meet its own needs for sand and gravel, and that there is ongoing demand for supply from Worcestershire as part of the Managed Aggregate Supply System, but the data does not indicate whether such demand is likely to increase or decrease in future.</p>	No change indicated by this data.
Demand indicator 1	Gross housing completions (refer to	The anticipated trajectory for new housing development in emerging local plans and the	Weak indicator for increase above 10-year average.

Indicator number	Demand indicator	Summary	Indication in relation to 10-year average
	<a href="#">MHCLG live tables on housing supply</a> ), compared with housing targets	<p>government's Standard Methodology both indicate that the number of dwellings required per year in future is 10% higher than the average number of completions seen over the last 10 years, but is 10% lower than the average number of completions seen over the last 3 years. It is estimated that housebuilding may account for a large proportion of Worcestershire's consumption of primary aggregates.</p>	
Demand indicator 2	Employment land completions, compared with requirements	<p>Unable to calculate trajectory for changes in material demand relating to employment land uses. However, 767ha of employment land is currently allocated in Local Plans across Worcestershire.</p>	No change indicated by this data.
Demand indicator 3	Large scale local infrastructure requirements compared with delivery (refer to local strategic Plans and <a href="#">National Highways</a> website)	<p>Unable to estimate the level of future demand for aggregate resources which local infrastructure developments might create, and whether this is likely to be significantly higher or lower than levels of demand over the last 10 years.</p>	No change indicated by this data.

Indicator number	Demand indicator	Summary	Indication in relation to 10-year average
Demand indicator 4	NSIPs and other major projects (refer to <a href="#">National Infrastructure Planning website</a> )	<p>No NSIPS within Worcestershire, but significant additional demand is anticipated within the West Midlands to supply HS2 development.</p> <p>Whilst Worcestershire is some distance from the line of the HS2 development, additional aggregate extraction in Worcestershire is likely to be needed in order help meet the demands placed upon aggregate supply chains in the West Midlands.</p>	Strong indicator for increase significantly above 10-year average
Demand indicator 5	3-year aggregate sales average	<p>The three-year sales average (discounting 2020 data due to Covid-19 anomaly) is almost exactly the same as the 10-year average (0.4% higher), and may indicate that the 10-year average is representative of current levels of demand.</p> <p>However, the trend across these years has been for sales to increase and may therefore indicate that the 3 year average (and 10 year average) may under-represent current and potential future demand.</p>	Weak indicator for increase above 10 year average.
Demand indicator 6	Sub-regional apportionment figures	Sub-regional apportionment of 0.871 million tonnes was 53% higher than the 10-	Weak indicator for increase above 10 year average.

Indicator number	Demand indicator	Summary	Indication in relation to 10-year average
		year average, but was not intended to apply beyond 2016.	

**Table 12 Supply indicators for sand and gravel**

Indicator number	Supply indicator	Summary	Indication in relation to 10-year average
Supply indicator 1	Quality and/or capacity constraints of existing permitted reserves	None of Worcestershire's sites active as of 31st December 2020 has conditions attached to its planning permission which would restrict the productive capacity of the site.	No change indicated by this data.
Supply indicator 2	Windfall minerals permissions / trends	Limited remaining site allocations in adopted MLP may have limited the number of applications for new mineral development in recent years.  Despite this, planning permissions have been granted in Worcestershire for some windfall sites.  There are also a number of planning applications pending decision, a number of pre-application discussions over the last three years regarding potential future applications, and many sites which have also been put forward for	No change indicated by this data.



Indicator number	Supply indicator	Summary	Indication in relation to 10-year average
		potential allocation in the forthcoming Mineral Site Allocations Development Plan Document.	
Supply indicator 3	Progressive exhaustion of permitted reserves over Plan period and permitted lifespans of productive sites.	<p>Planning permission for one of Worcestershire's existing sites ends on 31st December 2026. This is now considered a short timescale for replenishment of this productive capacity.</p> <p>No sites have ceased production between 2018 and 2020.</p> <p>The emerging Minerals Local Plan contains policies to enable both new mineral development and extensions to existing sites, and it proposes to allocate 100 areas of search for sand and gravel (70 for terrace and glacial sand and gravel resources, and 30 for solid sand resources).</p>	Weak indication of short-term limitations in ability to supply due to limited permitted reserves and short lifespans of some existing sites.
Supply indicator 3	Transport constraints affecting markets for aggregates	Worcestershire does not have any rail depot 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	No change indicated by this data.

Indicator number	Supply indicator	Summary	Indication in relation to 10-year average
		<p>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.</p> <p>However, none of the sites in Worcestershire (as of December 2020) has conditions attached to its planning permission which would restrict the productive capacity of the site.</p>	
Supply indicator 4	Limited geological reserves	<p>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, but with limited consideration of quality of resources of other planning/viability constraints.</p> <p>Overall, considered that sand and gravel resources exist which should enable supply in the short to medium term.</p>	Information supports ongoing supply of sand and gravel from Worcestershire, but does not indicate the appropriateness of any particular production guideline.
Supply indicator 5	Local plan allocations	The adopted County of Hereford and Worcester Minerals Local Plan	Information supports ongoing supply of sand

Indicator number	Supply indicator	Summary	Indication in relation to 10-year average
		<p>(1997) allocated a number of preferred areas for sand and gravel working in Worcestershire, but there is very low confidence that the limited remaining Preferred Areas are deliverable.</p> <p>The new Minerals Local Plan was under examination in public in 2020, but it proposes to allocate 100 areas of search for sand and gravel commits to the development of a separate Mineral Site Allocations DPD to allocate specific sites and/or preferred areas. Five calls for sites have resulted in a number of potential sites being put forward, and these are under consideration in the development of the DPD.</p>	<p>and gravel from Worcestershire and is a positive indication of ability to supply in the medium term, but does not indicate the appropriateness of any particular production guideline.</p>
Supply indicator 6	Contribution from alternative aggregates	<p>There is no data available to indicate the level of contribution made by substitute materials in Worcestershire.</p> <p>There is one industrial process in Worcestershire known to produce material suitable for processing into secondary aggregates, and a facility with planning permission to</p>	No change indicated by this data.

Indicator number	Supply indicator	Summary	Indication in relation to 10-year average
		<p>process this material. Incinerator Bottom Ash Aggregate from this facility is currently used under the Environment Agency Regulatory Position Statement RPS 247. The process of obtaining End of Waste Criteria to use the recovered IBAA in block manufacture has also commenced.</p> <p>Inert waste is managed at a number of facilities in Worcestershire, but it is not possible to assess the proportion which was subsequently sold or used as recycled aggregate.</p> <p>Secondary and recycled materials account for 28% of the total market nationally. There is no evidence to indicate whether Worcestershire is likely to produce any more or any less than the national average, but it is likely that arisings of recycled and secondary materials will rise and fall with economic conditions, mirroring demand for primary materials. On this basis, this LAA assumes that the contribution of substitute, secondary and recycled materials is already accounted for</p>	

Indicator number	Supply indicator	Summary	Indication in relation to 10-year average
		prior to considering the sales figures for primary aggregates	

**Conclusion: Sand and gravel**

9.3. No demand indicators suggest that the production guideline should be lower than the 10-year average. Some indicators weakly suggest that an increase above the 10-year average may be necessary, and one indicator suggests that a significant increase above the 10-year average should be considered.

**9.4. It is therefore proposed to deviate from the 10-year sales average by +50%.**

9.5. This uplift is considered to be appropriate after assessing Worcestershire’s ability to supply sand and gravel, albeit that there is some concern about the scale of the existing landbank of permitted reserves and permitted timescales of some of Worcestershire’s existing sites.

**9.6. The production guideline for sand and gravel identified by this Local Aggregates Assessment is therefore 0.853 million tonnes.**

9.7. Based on this production guideline and the stock of permitted reserves of 2.504 million tonnes, **Worcestershire had a landbank of 2.94 years at 31<sup>st</sup> December 2020.**

## Crushed rock

9.8. Starting point: 10-year sales average for crushed rock of 0 tonnes, permitted reserves of 0 tonnes.

**Table 13. Demand indicators for crushed rock**

Indicator number	Demand indicator	Summary	Indication in relation to 10-year average
Demand / supply indicator (depending on movements into or out of the area)	Levels of imports and exports	<p>Data indicates that Worcestershire was a net importer of crushed rock in 2009, 2014 and 2019, but with the scale varying over these years and some concerns about the reliability of the data.</p> <p>This indicates that Worcestershire has not been able to meet its own needs for crushed rock, and that there is ongoing demand for supply from outside Worcestershire as part of the Managed Aggregate Supply System, but this indicator does not show whether such demand is likely to increase or decrease in future.</p>	Strong indicator for increase above 10-year average.
Demand indicator 1	Gross housing completions (refer to <a href="#">MHCLG live tables on housing supply</a> ), compared with housing targets	The anticipated trajectory for new housing development in emerging local plans and the government's Standard Methodology both indicate that the number of dwellings required per year in future 10% higher than the average number of completions seen over the last 10 years, but is 10% lower than the average number of completions seen over the last 3 years. It is	Strong indicator for increase above 10-year average.

Indicator number	Demand indicator	Summary	Indication in relation to 10-year average
		estimated that housebuilding may account for a large proportion of Worcestershire's consumption of primary aggregates.	
Demand indicator 2	Employment land completions, compared with requirements	Unable to calculate trajectory for changes in material demand relating to employment land uses. However, 767ha of employment land is currently allocated in Local Plans across Worcestershire.	Strong indicator for increase significantly above 10-year average
Demand indicator 3	Large scale local infrastructure requirements compared with delivery (refer to local strategic Plans and <a href="#">National Highways</a> website)	Unable to estimate the level of future demand for aggregate resources which local infrastructure developments might create, and whether this is likely to be significantly higher or lower than levels of demand over the last 10 years.	Strong indicator for increase significantly above 10-year average
Demand indicator 4	NSIPs and other major projects (refer to <a href="#">National Infrastructure Planning website</a> )	No NSIPs within Worcestershire, but significant additional demand is anticipated within the West Midlands to supply HS2 development.  Whilst Worcestershire is some distance from the line of the HS2 development, additional aggregate	Strong indicator for increase significantly above 10-year average

Indicator number	Demand indicator	Summary	Indication in relation to 10-year average
		extraction in Worcestershire is likely to be needed in order help meet the demands placed upon aggregate supply chains in the West Midlands.	
Demand indicator 5	3-year aggregate sales average	The three-year sales average is exactly the same as the 10 year average.  However, this is due to having no sites and no production, and should not be misconstrued as a lack of demand. However, it also does not provide any indication of the scale of or trend in demand.	No change indicated by this data.
Demand indicator 6	Sub-regional apportionment figures	Sub-regional apportionment of 0.163 million tonnes. It was not intended to apply beyond 2016 but does provide some indication of a potential scale of demand.	Weak indicator for increase above 10 year average.

**Table 14. Supply indicators for crushed rock**

	Supply indicator	Summary	Indication in relation to 10-year average
Supply indicator 1	Quality and/ or capacity constraints of existing permitted reserves	There are no sites with permitted reserves.	Strong indication of short to medium term limitations on ability to supply crushed rock.



	<b>Supply indicator</b>	<b>Summary</b>	<b>Indication in relation to 10-year average</b>
Supply indicator 2	Windfall minerals permissions/trends	<p>No remaining site allocations in adopted MLP which may have limited the number of applications for new mineral development in recent years.</p> <p>There are no planning applications pending decision, nor have any pre-application discussions taken place over the last three years regarding potential future applications, and no sites have also been put forward for potential allocation in the forthcoming Mineral Site Allocations Development Plan Document.</p>	Strong indication of medium to long term limitations on ability to supply crushed rock, as there is no known interest from the minerals industry to bring sites forward.
Supply indicator 3	Progressive exhaustion of permitted reserves over Plan period and permitted lifespans of productive sites.	<p>Worcestershire has no active crushed rock sites, and therefore no productive capacity. No sites ceased production between 2018 and 2020.</p> <p>The emerging Minerals Local Plan contains policies to enable both new mineral development and extensions to existing sites. It does not propose to allocate any areas of search for crushed rock, but it</p>	<p>Strong indication of short term limitations on ability to supply crushed rock.</p> <p>Weak indication of ability to supply in medium to long term (i.e. development enabled by emerging Minerals Local Plan, but with no known mineral industry intention to bring sites forward).</p>

	Supply indicator	Summary	Indication in relation to 10-year average
		includes criteria-based policies to enable crushed rock development on windfall sites, and proposed Main Modifications strengthen the policy support for crushed rock development within Worcestershire.	
Supply indicator 3	Transport constraints affecting markets for aggregates	<p>Worcestershire does not have any rail depot for the import or export of minerals. Water transportation takes place on the River Severn, but this is limited to moving "as-dug" material (sand and gravel) 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.</p> <p>However, there are no permitted sites in Worcestershire as of December 2020.</p>	No change indicated by this data.
Supply indicator 4	Limited geological reserves	Strategic-level information suggests that there is only a small amount of	Strong indication of limitations on ability to supply.

			<b>Indication in relation to 10-year average</b>
		<p>crushed rock resource in Worcestershire which is unlikely to be affected by international or national designations, and with limited consideration of quality of resources or other planning/viability constraints.</p> <p>The international and national constraints considered in the strategic 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.</p>	
Supply indicator 5	Local plan allocations	<p>The adopted County of Hereford and Worcester Minerals Local Plan (1997) allocated one preferred area for crushed rock working in Worcestershire, which has been worked and is in aftercare.</p> <p>The new Minerals Local Plan was under examination in public in 2020. It does not propose to allocate any areas of search for crushed rock, but it includes criteria-based</p>	<p>Strong indication of limitations on ability to supply in the short to medium term: Emerging Minerals Local Plan will provide policy support to enable crushed rock development, but the lack of site proposals by landowners and mineral operators for potential allocation as specific sites or preferred areas is a strong indication of</p>

	Supply indicator	Summary	Indication in relation to 10-year average
		<p>policies to enable crushed rock development on windfall sites, and proposed Main Modifications strengthen the policy support for crushed rock development within Worcestershire.</p> <p>Five calls for sites have been undertaken however no potential sites have been put forward for crushed rock.</p>	<p>limitations on ability to supply for the short to medium term.</p>
Supply indicator 6	Contribution from alternative aggregates	<p>There is no data available to indicate the level of contribution made by substitute materials in Worcestershire.</p> <p>There is one industrial process in Worcestershire known to produce material suitable for processing into secondary aggregates, and a facility with planning permission to process this material. Incinerator Bottom Ash Aggregate from this facility is currently used under the Environment Agency Regulatory Position Statement RPS 247. The process of obtaining End of Waste Criteria to use the</p>	<p>No change indicated by this data.</p>

	Supply indicator	Summary	Indication in relation to 10-year average
		<p>recovered IBAA in block manufacture has also commenced.</p> <p>Inert waste is managed at a number of facilities in Worcestershire, but it is not possible to assess the proportion which was subsequently sold or used as recycled aggregate.</p> <p>Secondary and recycled materials account for 28% of the total market nationally. There is no evidence to indicate whether Worcestershire is likely to produce any more or any less than the national average, but it is likely that arisings of recycled and secondary materials will rise and fall with economic conditions, mirroring demand for primary materials. 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</p>	

### **Conclusion: Crushed rock**

- 9.9. Many indicators show that there is demand for crushed rock resources, and therefore an increase above the 10-year average should be considered. However, there are also very significant limitations on the county's ability to supply crushed rock resources. The emerging Minerals Local Plan will provide policy support to enable crushed rock working, but there are significant constraints on the majority of the crushed rock resources in the county, and there has been no interest in crushed rock development expressed by the minerals industry for some time, with no sites proposed in response to "calls for sites" for potential allocation, no pre-application discussions and no planning applications pending decision.
- 9.10. Recognising the National Planning Policy Framework's requirement to maintain at least a 10-year landbank of permitted reserves of crushed rock, the emerging Minerals Local Plan's recognition that Worcestershire should seek some level of provision from its indigenous crushed rock resources, and to avoid a production guideline of zero potentially being viewed as being a barrier to crushed rock development, it is considered that the production guideline for crushed rock should be increased above the 10-year average of 0 tonnes.
- 9.11. 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.
- 9.12. **This LAA therefore concludes that the production guideline for crushed rock in Worcestershire is explicitly greater than 0 tonnes.**
- 9.13. Based on the stock of permitted reserves of 0 tonnes, **Worcestershire had a landbank of 0 years at 31<sup>st</sup> December 2020.**

## 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 January and February 2022. The following comments were received from the AWP's and their members:

### West Midlands Aggregate Working Party Minerals Products Association

**MPA comment:** We welcome the attempt to quantify tonnages against various types of development when considering future aggregate demand.

**WCC response:** Noted.

**MPA comment:** In respect of the sand and gravel provision the recognition of the impact of infrastructure projects may have on the supply chain in the West Midlands, as is the fact that imports into Worcs. are a reflection of the Counties own demand is welcomed. We support the proposal to deviate from the 10 year average by 50% in terms of production guidelines. This approach along with the more sympathetic policies in the emerging plan following the main modifications improves Worcs. ability to make an appropriate contribution when the W Midlands area is under immense supply pressure.

**WCC response:** Noted.

**MPA comment:** It is pleasing to see Worcs. moving away from the zero provision stance it has taken in the past on crushed rock. This along with more sympathetic policies in the emerging plan puts Worcs. on a better footing to be in a position to potentially provide indigenous rock.

**WCC response:** Noted.

**MPA comment:** In summary it is felt that the LAA is a much improved approach on previous years in terms of determining future aggregate provision.

**WCC response:** Noted.

### South West Aggregate Working Party Gloucestershire County Council

**GCC comment:** Officers acknowledge the local circumstances present in Worcestershire regarding crushed rock aggregate. Imports are clearly the only realistic way of meeting local demand in the foreseeable future. Officers also acknowledge that crushed rock supplies from Gloucestershire will likely make a contribution to demand generated in Worcestershire over the coming years and that this has been the case in the past. Nevertheless, officers also recognise and support the emerging minerals local plan policy position and LAA approach put forward by Worcestershire County Council concerning the treatment of indigenous crushed rock resources. Officers agree that the lack of industry interest at this time to re-ignite local supplies is not a credible land-use constraint as such, but a reflection of the present viability of Worcestershire's resources. It is understood that the emerging mineral local plan policy framework provides

clarity as to land-use planning constraints that do exist and the necessary requirements of any future operator(s) and proposal(s) in order to delivery sustainable mineral development for crushed rock aggregate.

**WCC response:** Noted.

**GCC comment:** Officers from Gloucestershire remain fully committed to regularly monitoring the ever-evolving characteristics of strategic aggregate supplies alongside neighbouring MPA's such as Worcestershire County Council. Supporting steady and adequate aggregate supplies in and around the shared sub-regional area, has been, and will continue to be an important strategic issue covered by the statutory Duty to Co-operate.

**WCC response:** Noted.



## 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 <a href="#">MHCLG live tables on housing supply</a> ), 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 <a href="#">National Highways</a> website)	e.g. new roadbuilding. Check local development plans, LEPs, local transport plans etc.	Demand indicator
4	NSIPs and other major projects (refer to <a href="#">National Infrastructure Planning website</a> )	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 increases in demand that can be forecast with	Demand indicator

No.	Indicator	Type of information	Demand or supply indicator
		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 through 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.	<ul style="list-style-type: none"> <li>a) Compare sales against data on the number of operational sites and new permitted reserves (assess replenishment rates).</li> <li>b) Record the number of sites that have ceased production of aggregates and comment on reasons for cessation if possible.</li> <li>c) Record cessation dates for mineral production at permitted sites.</li> <li>d) Highlight sites where the MLP includes allocations for the extension of existing sites and the potential duration of continued production from allocated sites.</li> </ul>	Supply indicator
10	Transport constraints affecting markets for aggregates	<p>e.g. lack of rail freight opportunities</p> <p>Note output restrictions on permitted sites (number of lorry movements/ tonnages).</p>	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.

## Appendix 3: Calculation of aggregate demand for housing development

A typical new house uses between 60-200 tonnes of aggregate, or up to 400 tonnes of aggregate when supporting infrastructure, such as access roads, is taken into account.<sup>40,41</sup> This does not distinguish between use of sand and gravel and crushed rock, and does not include any indication of the likely level of demand for material used in maintaining or refurbishing existing housing stock, but does enable calculations to be made of the likely scale of demand for aggregate for new housing development.

Table B uses these estimates to calculate the scale of demand new housing development may account for, and presents this in comparison to both the 10-year sales average of aggregate (sand and gravel) produced in Worcestershire and the 2019 total consumption of aggregates in Worcestershire.

**Table B. Calculation of aggregate demand for housing development**

<b>Housing development forecasting options</b>	<b>Annual aggregate demand for housing development at 60 tonnes per house (excluding supporting infrastructure)</b>	<b>Annual aggregate demand for housing development at 200 tonnes per house (excluding supporting infrastructure)</b>	<b>Annual aggregate demand for housing development at 400 tonnes per house (including supporting infrastructure)</b>
<b>Housing development at average number of completions delivered between 2010 and 2019:</b>	0.112 million tonnes  Equivalent of 19.7% of 10-year average sand and gravel sales	0.374 million tonnes  Equivalent of 65.7% of 10-year average sand and gravel sales	0.748 million tonnes  Equivalent of 131.5% of 10-year average sand and gravel sales
<b>1,871 dwellings per year</b>	Equivalent of 10.0% of total aggregate consumption in 2019	Equivalent of 33.2% of total aggregate consumption in 2019	Equivalent of 66.5% of total aggregate consumption in 2019

<sup>40</sup> The British Geological Survey (2008) report “*The need for indigenous aggregates production in England*” states that “Each new house built in England requires 60 tonnes of aggregates (three lorry loads). If all roads and utilities are included, the requirement can increase to as much as 400 tonnes of aggregates per house (twenty lorry loads)”, [http://nora.nerc.ac.uk/id/eprint/3711/1/Aggregates - Final Report June 2008.pdf](http://nora.nerc.ac.uk/id/eprint/3711/1/Aggregates_-_Final_Report_June_2008.pdf).

<sup>41</sup> 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](https://www.mineralproducts.org/MPA/media/root/Publications/2021/Profile_of_the_UK_Mineral_Products_Industry_2021.pdf)

<b>Housing development forecasting options</b>	<b>Annual aggregate demand for housing development at 60 tonnes per house (excluding supporting infrastructure)</b>	<b>Annual aggregate demand for housing development at 200 tonnes per house (excluding supporting infrastructure)</b>	<b>Annual aggregate demand for housing development at 400 tonnes per house (including supporting infrastructure)</b>
<b>Housing development at level anticipated by the December 2020 “Standard Methodology”: 2,047 dwellings per year</b>	0.123 million tonnes  Equivalent of 21.6% of 10-year average sand and gravel sales  Equivalent of 11.0% of total aggregate consumption in 2019	0.410 million tonnes  Equivalent of 72.1% of 10-year average sand and gravel sales  Equivalent of 36.6% of total aggregate consumption in 2019	0.820 million tonnes  Equivalent of 144.1% of 10-year average sand and gravel sales  Equivalent of 73.2% of total aggregate consumption in 2019
<b>Housing development at level anticipated in adopted Local Plans: 2,218 dwellings per year</b>	0.133 million tonnes  Equivalent of 23.4% of 10-year average sand and gravel sales  Equivalent of 11.9% of total aggregate consumption in 2019	0.444 million tonnes  Equivalent of 78.0% of 10-year average sand and gravel sales  Equivalent of 39.6% of total aggregate consumption in 2019	0.887 million tonnes  Equivalent of 155.9% of 10-year average sand and gravel sales  Equivalent of 79.2% of total aggregate consumption in 2019
<b>Housing development at average number of completions seen over the last 3 years (2017-2019): 2316 dwellings per year</b>	0.139 million tonnes  Equivalent of 24.4% of 10-year average sand and gravel sales  Equivalent of 12.4% of total aggregate consumption in 2019	0.463 million tonnes  Equivalent of 81.4% of 10-year average sand and gravel sales  Equivalent of 41.3% of total aggregate consumption in 2019	0.926 million tonnes  Equivalent of 162.7% of 10-year average sand and gravel sales  Equivalent of 82.7% of total aggregate consumption in 2019

9.14. Based on the figures set out in Table 12, it is believed that the estimates of between 200 tonnes (excluding infrastructure) and 400 tonnes (including infrastructure) per house are the most likely to be representative of the demand for mineral resources placed upon Worcestershire's supply chain by housebuilding activities. Therefore, the LAA does not assess the impact of the 60 tonnes per house estimate on supply and consumption figures.