Worcestershire
Minerals Local Plan

Third Stage Consultation

Find out more online:
www.worcestershire.gov.uk/minerals

worcestershire
county council

Table of Contents

New House Farm Quarry, near Hartlebury

This document is the Third Stage Consultation on the Minerals Local Plan for Worcestershire. It has been prepared as part of the development of the Minerals Local Plan for Worcestershire which will replace current mineral planning policy in the county.

Worcestershire County Council, the Mineral Planning Authority for Worcestershire, has undertaken two previous consultations on the development of the Minerals Local Plan, two "calls for sites" and alongside these has consulted on the evidence base that informs the development of the plan. The comments received in response to these consultations have been taken into account to inform this Third Stage Consultation on the Minerals Local Plan for Worcestershire. They have given a strong guide on the strategic direction that the plan should take and the plans, strategies and local considerations that need to be taken into account.

This consultation seeks to ask two broad questions (these are broken down into further detail in the consultation questionnaire):

1. Do you support the principles set out in the plan?

This relates to the strategic direction of the plan, particularly whether the key challenges, vision, objectives and spatial strategy are appropriate to achieve the aims of national policy and are responsive to local considerations.

2. Do you agree with the wording of the text?

Decision making depends on the detailed wording of the plan. This consultation document has been developed as a full draft of the proposed wording of the Minerals Local Plan to enable you to comment on specific issues. This means that it is phrased as if the document has been adopted by Worcestershire County Council. However it remains a **consultation document**. Only wording included in this document in blue is intended to provide specific commentary for the purpose of consultation. **Blue text will be removed from the document before the next consultation stage**.

Consultation on this document will run for 12 weeks from 14th December 2016 to 8th March 2017. Responses will be taken into account in the preparation of the *Proposed Submission Version of the Minerals Local Plan*. Once this is prepared there will be a six week consultation which asks whether the plan complies with national requirements and legislation. The Council will then submit the plan to the Secretary of State who will appoint an independent inspector to examine the document. How can you get involved?

How can you get involved?

There are plenty of ways for you to get involved:

Respond to this document

This document sets out proposed wording for the Minerals Local Plan to enable comments to be made on the principles of the plan, the locations for mineral development and the specific issues that the policies seek to address.

The questionnaire is available at:
www.worcestershire.gov.uk/minerals

Email: minerals@worcestershire.gov.uk
Post: FREEPOST RTHC-XXCK-AJGY
Minerals and Waste Planning Policy
Worcestershire County Council
County Hall, Spetchley Road
Worcester, WR5 2NP

Please return any questionnaires to us by
Wednesday 8th March 2017

This is a full draft of the plan; if you only wish to comment on specific issues please feel free to just focus on these questions.

It should be noted that all responses to this consultation will be made public on the council's website. They will be published in a document outlining how we intend to address the issues raised. Address details will not be published.

Find out more

Pop along to one of our **open days** to ask us questions. We will be at:.

Bromsgrove Library
from 10am – 3:30pm on Saturday 14th January 2017

Evesham Library
from 10am – 3:30pm on Saturday 21st January 2017

Upton Memorial Hall
from 2:30pm – 8:00pm on Thursday 19th January 2017

Droitwich Library
from 10am – 3:30pm on Saturday 4th February 2017

Kidderminster Library
from 2:30pm – 8pm on Tuesday 7th February 2017

The Hive Worcester
from 2:30pm – 8pm on Monday 13th February 2017

These sessions are designed for residents, Parish Councils and other interested parties to drop-in and ask us any questions about the consultation.

Give us a call and talk to the Minerals Planning Policy Team on **(01905) 766374**

We will also be holding workshops for the mineral industry and Parish Councils. Please contact us for further information.

At previous stages:

Autumn - Winter 2012: First Stage Consultation

You helped us to identify the issues which are important in Worcestershire and we have used your comments to develop subsequent consultation documents and the evidence base.

Autumn 2013 - Spring 2014: Second Stage Consultation

You helped us to:

- Establish the Vision and Objectives
- Develop an overarching "Spatial Strategy" to direct future minerals development
- Identify how much mineral we need to make provision for and when it will be required
- Identify the issues that should be addressed through policies on:
  - How minerals should be worked
  - Where minerals should be worked
  - How mineral sites should be restored
  - How minerals should be safeguarded for the future.

Summer 2014 and Summer 2015: Call for Sites

You gave us information about mineral resources and sites that you thought might be viable to work during the life of the plan.

At this stage:

Autumn 2016 - Spring 2017: Third Stage Consultation

You can help us by commenting on the draft vision, objectives and spatial strategy, the issues considered, the drafting of the policies and proposed locations for mineral development. This includes the opportunities to comment on the priorities for each strategic corridor.

At later stages:

Pre-submission consultation

You will have six weeks to tell us if you think that the Minerals Local Plan complies with national requirements and legislation.

Examination in public

We will submit the Minerals Local Plan to the Secretary of State who will appoint an independent Inspector to look at whether they think the Minerals Local Plan complies with national requirements and legislation.

Adoption

If the Inspector approves the Minerals Local Plan the Council will decide whether to adopt it and make it official planning policy for the county. This is a decision made by the elected members of the Council.

After this decision has been made there is a six-week period where the decision can be legally challenged.

Church Farm East sand and gravel working, Grimley

1. Introduction

Background

1.1 Minerals are an essential raw material in our daily lives. Without minerals, we would not be able to build our houses, schools, hospitals, roads and railway lines. Different types of minerals are used for different things:

- **Aggregate minerals** are used without much treatment for building, such as roads and houses. Sand, gravel and crushed rock are aggregate minerals.
- **Industrial minerals** are used to manufacture products. These include special types of sand for making glass, clay for making bricks and ores for metals.
- **Energy minerals** such as coal, oil and gas are used for fuel.

1.2 Minerals naturally occur due to variations in geology. This means that minerals are not evenly distributed. In Worcestershire we have sand and gravel, some types of rock, brick clay, silica sand, and salt.[1]

The purpose of the Minerals Local Plan

1.3 Worcestershire County Council is a Mineral Planning Authority meaning that it is responsible for making decisions on planning applications for mineral development in Worcestershire.[2] Planning applications must be determined in accordance with the Development Plan unless material considerations indicate otherwise.[3]

1.4 The Minerals Local Plan is part of the statutory Development Plan. It applies to the whole of the county of Worcestershire. The Development Plan is also made up of Development Plan Documents that have been prepared by the County Council and the City, Borough and District Councils in Worcestershire, plus adopted Neighbourhood Plans in the county. The *National Planning Policy Framework* and Planning Practice Guidance are material considerations in planning decisions and must be taken into account in the preparation of local and neighbourhood plans, including the Minerals Local Plan.

1 See **Chapter 2: Portrait of Worcestershire** for details of why other minerals found in the county are not considered to be a "resource".
2 *Town and Country Planning Act 1990*
3 *Planning and Compulsory Purchase Act 2004*

1.5 The Minerals Local Plan will be used by the Mineral Planning Authority to determine applications for mineral development. The City, Borough and District Councils in Worcestershire will also use it to make decisions on other types of planning applications that could sterilise mineral resources or infrastructure safeguarded in this plan.

1.6 The Mineral Planning Authority will take a positive approach to sustainable mineral development. Applicants are encouraged to engage in pre-application discussions before submitting their proposals. Pre-application discussion can help to facilitate applications through the planning process by highlighting issues which need to be considered at an early stage.

1.7 Worcestershire's Minerals Local Plan applies until 2035.[4] It supersedes the previous mineral planning policies for Worcestershire which were set out in the 1997 adopted *County of Hereford and Worcester Minerals Local Plan* (see **Appendix 1**).

The scope of the Minerals Local Plan

1.8 The Minerals Local Plan sets out a long term vision for mineral development in Worcestershire to 2035 and beyond. This vision integrates economic, social and environmental aims and responds to local issues. Detailed objectives have been developed to help guide the realisation of the vision. These objectives direct the policies and form the basis of the monitoring framework.

1.9 The plan identifies mineral resources in Worcestershire. It provides the framework to assess any form of mineral development, however it primarily focuses on the mineral resources which are most prevalent in the county and have the highest likelihood of being suitable and commercially attractive for exploitation during the lifetime of the plan:

- **Aggregate minerals:**
  - Sand and Gravel
  - Crushed Rock
- **Industrial minerals:**
  - Brick Clay
  - Silica Sand
  - Building Stone

1.10 It sets the expected level of provision required for a steady and adequate supply of aggregate minerals and an appropriate supply of industrial minerals from Worcestershire and identifies where minerals development should take place. It sets out policy criteria relating to design and delivery; amenity and well-being; transport; and the natural and historic environment. It addresses the whole life of a mineral development from inception to restoration[5] and after-use.

1.11 Additional policies relating to the recovery, treatment, storage, processing, sorting, transfer or deposit of mineral wastes and secondary and recycled materials are set out elsewhere in the development plan. At the time of adoption this is the *Waste Core Strategy for Worcestershire Adopted Waste Local Plan 2012 – 2027.*[6]

1.12 The Minerals Local Plan defines Minerals Safeguarding Areas and contains policies and Mineral Consultation Areas to ensure that mineral resources of local and national importance and supporting infrastructure are not needlessly sterilised by non-minerals development.

1.13 Implementation of the Minerals Local Plan will be monitored annually throughout its lifetime and reviewed when annual monitoring indicates that this is necessary.

The process

1.14 The Minerals Local Plan has been shaped in consultation with communities, businesses and other organisations. It has been informed by a robust evidence base and consideration of local circumstances set out in the background and information documents prepared by the Worcestershire County Council:

- Analysis of mineral resources in Worcestershire
- Adequate and steady supply of industrial minerals
- Biodiversity and mineral sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites
- Building stone in Worcestershire
- Clay in Worcestershire
- Coal mining in Worcestershire

4 This will cover an 18 year period from anticipated adoption, in line with national policy.
5 The process of preparing a site for its agreed afteruse is commonly referred to as "restoration", even though sites are not always returned to their original use.
6 Available on Worcestershire County Council's Waste Core Strategy webpage www.worcestershire.gov.uk/wcs.

- Concrete batching and asphalting plants in Worcestershire
- Contributing towards Worcestershire's priorities
- Conventional and unconventional hydrocarbons (oil and gas; excluding coal)
- Crushed rock in Worcestershire
- Local Aggregates Assessment
- Minerals and climate change
- Minerals and waste development framework annual monitoring reports
- Profile documents for environmental character areas
- Rail freight
- Salt and brine in Worcestershire
- Sand and gravel in Worcestershire
- Silica sand in Worcestershire
- The Malvern Hills Acts
- Water transport

These documents are available at: **www.worcestershire.gov.uk/mineralsbackground.**

1.15 It has also been informed by the county's *Local Transport Plan* and *Green Infrastructure Strategy*, as well as the adopted and emerging Local Plans and Neighbourhood Plans in the county.

1.16 The Minerals Local Plan has been subjected to a series of assessments during its development, and their findings have influenced subsequent stages of development:

- **Sustainability Appraisal**
  - Sustainability Appraisal Scoping Report (alongside the First Stage Consultation on the Minerals Local Plan)
  - Initial Sustainability Appraisal (alongside the *Second Stage Consultation on the Minerals Local Plan*)
  - Sustainability Appraisal Environmental Report (alongside the *Third Stage Consultation on the Minerals Local Plan*)
- **Habitats Regulations Assessment**
  - Habitats Regulations Assessment Scoping Report (alongside the *Second Stage Consultation on the Minerals Local Plan*)

  - Habitats Regulations Assessment report prepared alongside the *Third Stage Consultation on the Minerals Local Plan*
- **Strategic Flood Risk Assessment**
  - Surface and Ground Water Protection Issues, including Flood Risk Assessment of Submitted Sites (alongside the *Third Stage Consultation on the Minerals Local Plan*)
- **Equality Impact Assessment**
  - Equality Impact Assessment Desktop Screening (alongside the *First Stage Consultation on the Minerals Local Plan*)
  - Equality Impact Assessment Updated Desktop Screening (alongside the *Third Stage Consultation on the Minerals Local Plan*)

Links with other plans and policies

1.17 The Minerals Local Plan should be read as a whole and alongside relevant European, national, regional and local policies. Government policy requires that the Minerals Local Plan should accord with but not repeat or reformulate national policy.

1.18 The Worcestershire Minerals Local Plan takes a locally distinctive approach and is guided by policies prepared internationally, nationally and locally. Partnership working and cooperation have been key to this approach.

River Severn: Worcester City Centre

2. Portrait of Worcestershire

Context

2.1 The county of Worcestershire has a population of 569,000[1] and covers an area of more than 173,500ha. It consists of the city of Worcester, borough of Redditch and the districts of Bromsgrove, Malvern Hills, Wychavon and Wyre Forest. Agricultural land and open countryside dominate the landscape, however 70% of the total population live in the major urban centres of Worcester, Redditch, Kidderminster, Bromsgrove, Malvern, Droitwich, Evesham and Stourport-on-Severn.

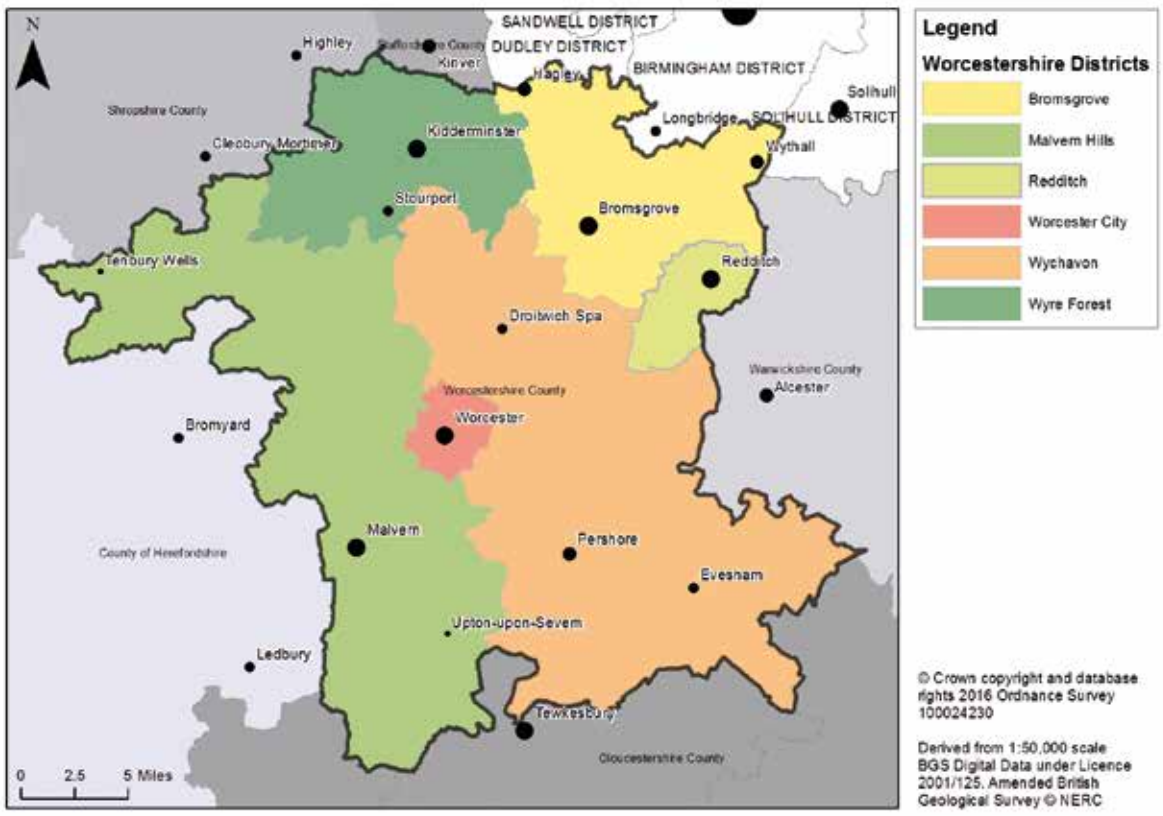
2.2 Worcestershire is adjacent to the West Midlands conurbation to the north but is also surrounded by the largely rural counties of Gloucestershire to the south, Herefordshire to the west, Warwickshire to the east and Shropshire and Staffordshire to the north.

2.3 Worcestershire County Council is the Minerals and Waste Planning Authority for the county of Worcestershire, as shown in **Figure 2.1.**

Diglis Docks Worcester

1 As of 2013. Worcestershire County Council, Population Statistics http://www.worcestershire.gov.uk/info/20044/research_and_feedback/795/population_statistics.

Figure 2.1 Worcestershire and surrounding areas



Worcestershire's mineral resources

2.4 Minerals are a primary material, however in some cases substitute, secondary and recycled materials or mineral wastes can be used to off-set demand for these primary materials. This section summarises the primary materials found in the county and the processing capacity for substitute, secondary and recycled materials or mineral wastes.

2.5 There are four broad types of minerals found in Worcestershire. These are grouped into:

- **Aggregate minerals:** "Aggregate" is the term used for rock that has been broken into small pieces, either by nature or by people[2]. Aggregates can be used either on their own or with the addition of cement, lime or a bituminous binder in construction. Aggregates are essential for the construction industry, and are used to make concrete, mortar, asphalt and other building materials.


Crushed Rock aggregate

2 Mineral Products Association website, accessed 24 March 2015, *Amazing mineral products* (http://www.mineralproducts.org/qua_agg01.htm).

These can be primary aggregates sourced directly from the ground, or secondary, recycled or substitute materials. Marine aggregates are also used but not found in Worcestershire and constitute a very small part of supply in the county.[3]

The main end-uses of aggregates are:

- Road construction
- Railway track ballast
- Building construction
- Construction and maintenance of reservoirs and sewage treatment works.[4]

- **Industrial minerals:** Minerals used in industrial and production processes. In Worcestershire this comprises silica sand, brick clay and salt (brine).
- **Building stone:** In Worcestershire this comprises a wide range of different types of rock which have been used for building, walling, roofing and as a carvable "dimension stone".
- **Energy minerals:** Small areas of coal deposits exist in the county but these are not significant enough to be classed by the Coal Authority as a coal resource. There are no other known oil, gas or hydrocarbon resources in the county.

2.6 Securing a steady and adequate supply of mineral resources also requires supporting infrastructure including storage, handling and transport facilities.

3 17,000 tonnes in 2009
4 Mineral Products Association website, accessed 24 March 2015, *Aggregates* (http://www.mineralproducts.org/prod_agg01.htm).
5 From this point onwards primary aggregates are simply referred to as "aggregates". Secondary and recycled aggregates will be referred to explicitly.

Primary aggregate minerals in Worcestershire[5]

Sand and gravel

Figure 2.2 Sand and gravel resources in Worcestershire

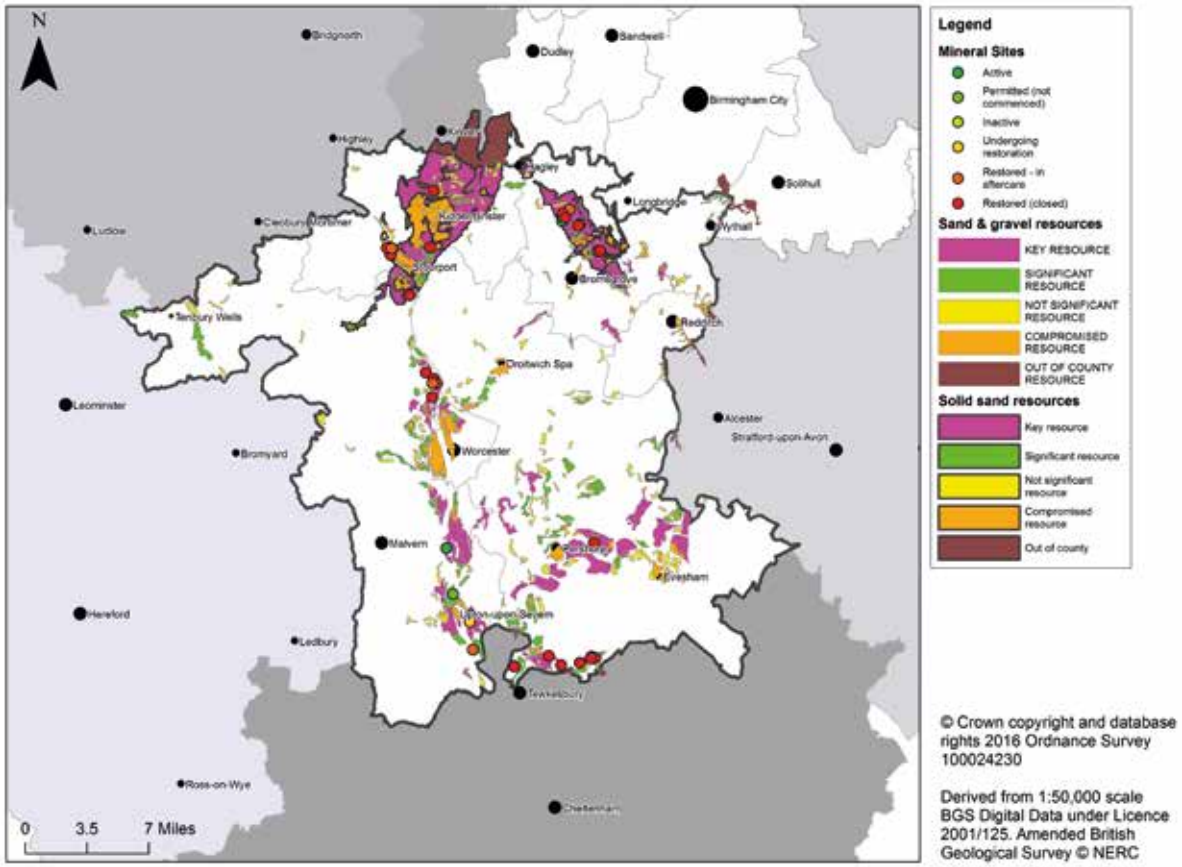
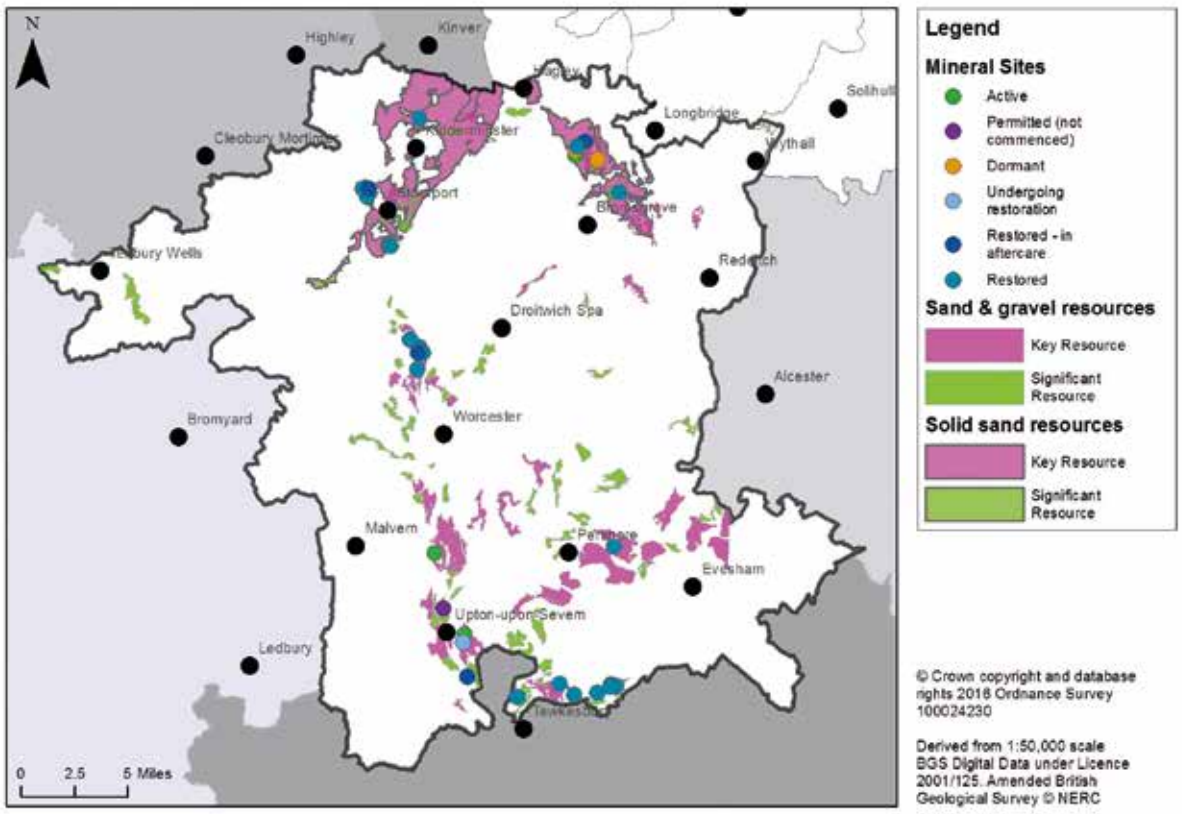


Figure 2.3 Key and significant sand and gravel resources in Worcestershire



2.7 The sand and gravel resources in Worcestershire can be broadly classified as solid sands (which form part of the bedrock geology) and terrace and glacial sand and gravel (materials transported and deposited by water or ice).

2.8 Geological information exists to show where sand and gravel deposits are evident, but not all deposits will form a workable resource. This will depend on the extent, depth, quality and composition of deposits. **Figure 2.3** identifies the terrace, glacial and solid sand resources that have been assessed during the preparation of the plan as having the potential to be "key" or "significant" resources.[6] The qualities and properties of these materials vary across the county.

Terrace and glacial sand and gravel

2.9 Superficial sand and gravel deposits are subdivided into river terrace deposits and glacial deposits, reflecting their different origin.[7]

2.10 Extensive sand and gravel deposits in Worcestershire are associated with the terraces of the River Severn, the River Avon and the Carrant Brook. These consist of materials laid down by natural processes associated with the historic routes of these watercourses. The deposits consist of a mixture of unconsolidated sand and gravel, in varying proportions, from which coarse and fine aggregates can be produced by a process of washing and size separation.[8] River sand and gravel deposits have been naturally processed by running water, an efficient mechanism for separating the different size fractions of the sediment being transported. As a result, beds of terrace sand and gravel are likely to be relatively consistent in terms of particle size and usually contain a lower proportion of silt and clay "fines" than glacial deposits.[9] The commercial value of these deposits is likely to depend on their extent, thickness and quality. The deposits rarely exceed

6 Worcestershire County Council (2016) *Analysis of Mineral Resources in Worcestershire*. Key resources are those deposits estimated to contain more than 2 million tonnes of resource. Significant resources are those deposits estimated to contain between 600,000 and 2 million tonnes of resource. Deposits less than 10ha or 200m wide were excluded from assessment. Deposits which were estimated to contain less than 600,000 tonnes of resource were identified as not significant and those deposits or parts of deposits which were overlain by concentrated built development were identified as compromised.

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

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

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

10m in thickness; 3m to 6m is typical for the river terraces of the Severn and Avon, with deposits typically being thinner elsewhere.[10] Terrace and glacial sand and gravel deposits are often overlain by "overburden" of sediments and soils but this is typically just a few metres deep.

2.11 Worcestershire has a history of sand and gravel working along the Severn and Carrant Brook Valleys, but very little working has taken place in the Avon Valley. This may be due to chance, but is more likely an indication that the deposits in the Avon Valley are less likely to be economically viable. There is some evidence that the depth of the deposits in the Avon valley is likely to be near the minimum limits for economically viable working, and therefore viability will be particularly sensitive to the quality and consistency of the deposit.[11] Working along the Severn Valley is currently ongoing at several sites. The last working along the Carrant Brook finished in the 1990s.

2.12 Glacial sand and gravel deposits include those laid down by glacial and glaciofluvial processes associated with ice-sheets, glaciers and, particularly, their meltwaters.[12] They are more variable than terrace deposits, less predictable in geographical extent and have a wider range of particle sizes which may restrict their commercial potential.[13] In general, glacial deposits in Worcestershire are likely to be less than 10m thick, but may exceed 20m thickness where they infill hollows or channels scoured into underlying deposits.[14]

2.13 Glacial deposits are more sporadic than terrace deposits. They are largely found in the north eastern part of the county. These deposits have not been worked extensively in Worcestershire and in recent times[15] have only been worked alongside underlying solid sands (see below).

10 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*
11 Garrett (1970) *The Sand and Gravel Resources of the Terrace Deposits of the River Avon from Tewkesbury to Harvington.*
12 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*
13 British Geological Survey and Department of the Environment, Transport and the Region (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*
14 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*
15 Since at least the 1960's.
16 Herefordshire and Worcestershire Earth Heritage Trust website, accessed 24th March 2015, Kidderminster Formation (http://www.earthheritagetrust.org/pub/learning-discovery/aggregates/lithology-profiles/kidderminster-formation/).
17 British Geological Survey website, accessed 25th March 2015, *The BGS Lexicon of Named Rock Units — Result Details: Kidderminster Formation.*
18 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*

Working terrace sand and gravel deposits at Ball Mill Quarry (courtesy of Herefordshire and Worcestershire Earth Heritage Trust)

Solid sand

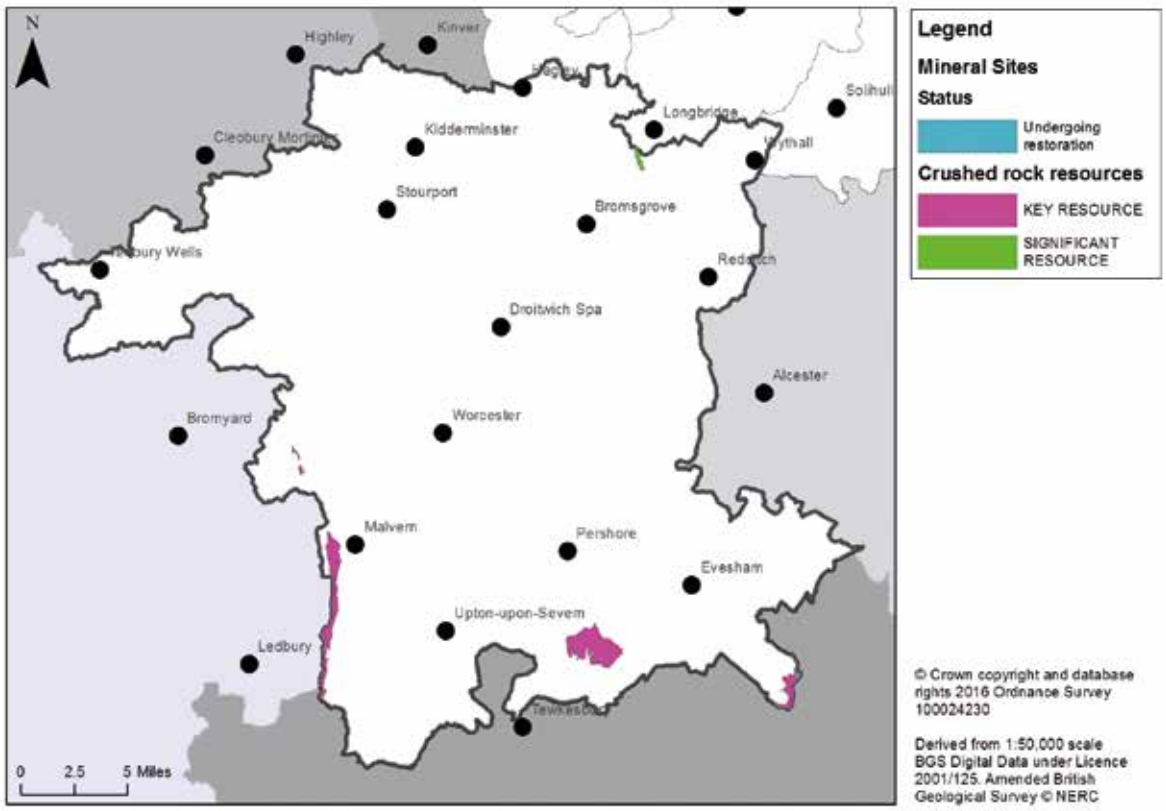
2.14 Solid sand and gravel resources are found in the weakly-cemented bedrocks of the Wildmoor Sandstone Formation and Kidderminster Sandstone Formation, which both lie between Bromsgrove and the Clent Hills in the north east of the county, and also stretch from Stourport towards Staffordshire and Dudley over the northern county boundary. The Wildmoor Sandstone Formation overlies the Kidderminster Sandstone Formation across much of this area, with the Kidderminster Formation being more extensive. These resources were deposited in a broad, arid, coastal plain during the Triassic period.[16]

2.15 The solid sand deposits are much deeper in nature than the terrace and glacial sand and gravel deposits. The Kidderminster Sandstone Formation can be up to 200m thick[17] and contains coarse to fine grade sand, as well as some pebbles and cobbles in the lower layers of the formation. This formation has not been worked for aggregate in Worcestershire.[18] The Wildmoor Sandstone Formation can be up to 284m thick.[19] It is easily crushed to produce sand and is currently worked at four sites in Worcestershire,[20] although not to the full depth of the formation. Some of the finer-grained material is worked to produce foundry sand (see Silica Sand below), and coarser sand is extracted and washed to produce building sand.[21]

19 British Geological Survey website, accessed 25th March 2015, The BGS Lexicon of Named Rock Units — Result Details: Wildmoor Sandstone Formation.
20 Chadwich Lane, Sandy Lane, Wildmoor Quarry, Chadwick Mill Farm (Pinches).
21 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*

Crushed Rock[22]

Figure 2.4 Crushed rock resources in Worcestershire



2.16 Limestone and granite are both capable of being used as crushed rock for aggregate purposes.

2.17 Limestone of the Jurassic Inferior Oolite Group is found in the south of the county in the Cotswold outlier Bredon Hill and the edge of the Cotswold plateau near Broadway. Smaller deposits of Aymestry Limestone and Woolhope Limestone form the Suckley, Abberley and Woodbury Hills[23] in the west of the county. Oolitic and Aymestrey limestones have been worked in the county over the last 50 years. However there are currently no workings or planning permissions for limestone in the county.

2.18 Igneous rocks of the Malverns Complex occur in the Malvern Hills on the county's western boundary with Herefordshire. This includes granites which are a potential source of good quality aggregate materials suitable for road surfacing, as well as for use in the lower layers of road pavements.[24]

2.19 The crushed rock resources in Worcestershire[25] are largely in areas protected by designations or legislation. Approximately 15% of the land containing crushed rock resources in the county is within 2.5km of the Bredon Hill Special Area of Conservation (SAC);[26] and approximately 99.5% of the land containing crushed rock resources in Worcestershire is within the Cotswolds Area of Outstanding Natural Beauty or Malvern Hills Area of Outstanding Natural Beauty.[27] 75% of land containing crushed rock resources in

22 Sometimes referred to as hard rock.

23 The limestone resources of the Abberley Hills are very narrow at the surface and have not been considered as resource areas in the Minerals Local Plan as they did not pass the initial size criteria in the *Analysis of Mineral Resources in Worcestershire* (2016) available at www.worcestershire.gov.uk/mineralsbackground.

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

25 Based on area of resources classified as Key or Significant in *Analysis of Mineral Resources in Worcestershire* (2016) available at www.worcestershire.gov.uk/mineralsbackground.

26 Bredon Hill SAC is a European site designated for nature conservation value. The presumption in favour of sustainable development in national policy "**does not apply** where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined". Department for Communities and Local Government (March 2012) *National Planning Policy Framework*, paragraph 119. Based on the *Habitats Regulation Assessement screening for the Worcestershire Minerals Local Plan* it is considered unlikely that most forms of crushed rock development would be acceptable in planning terms.

27 National policy states that "local planning authorities should... as far as is practical, provide for the maintenance of landbanks of non-energy minerals from outside... Areas of Outstanding Natural Beauty" Department for Communities and Local Government (March 2012) *National Planning Policy Framework, paragraph 144s.*

Worcestershire is controlled by the Malvern Hills Conservators who have a unique responsibility "to save the beauty of the Hills and protect them from the threat of quarrying".[28] No mineral working has been undertaken in the Malvern Hills since the 1970s.

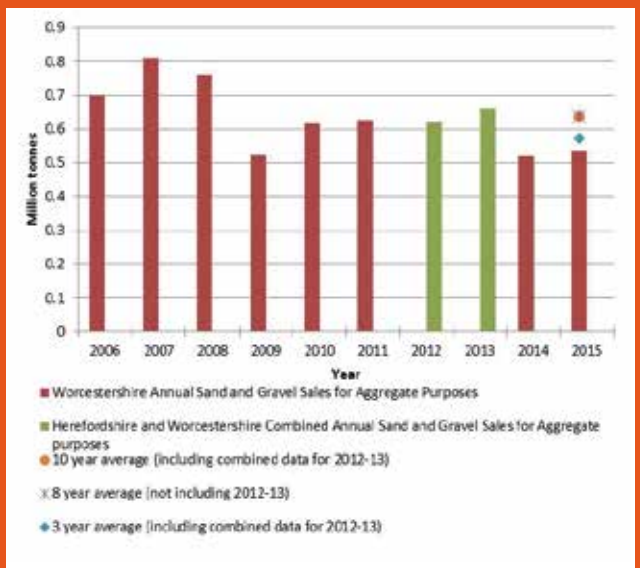
2.20 These factors in themselves are not an absolute bar on development. However, together they make it less likely that the minerals industry will find the prospect of crushed rock development in Worcestershire commercially attractive.

2.21 There has been limited market interest in working crushed rock in Worcestershire. In the last 35 years there has only been interest at 3 sites in the county: Shavers End[29] and Woodbury[30] in the Abberley Hills near Great Witley and Broadway Quarry at Fish Hill in the Cotswolds [31]. The two sites in the Abberley Hills ceased operation due to the poor quality of the material. Broadway Quarry was fully worked and extraction ceased in 2010. There has been no other operator interest in developing crushed rock workings in the county and no sites for crushed rock were put forward in response to the "call for sites" consultations undertaken as part of the preparation of this plan.[32]

Sales and production of primary aggregate in Worcestershire

Sand and gravel

Figure 2.5 Sand and gravel annual average sales 2006-2015[33]



2.22 Between 2006 and 2015, an average of 637,000 tonnes of sand and gravel were produced for aggregate purposes each year in Worcestershire.[34] There are currently four "active" and two "inactive" sand and gravel workings and processing facilities in the county,[35]

2.23 The landbank for sand and gravel in Worcestershire is currently 1.41 -1.48 years[36] meaning that the quantity of sand and gravel reserves with planning permission in Worcestershire is below the 7 year landbank level advocated by national policy. Market data nationally suggests that replenishment rates of sand and gravel reserves are slow with only around half of worked reserves being replaced through planning permission. In the long-run this could result in shortages in material supply and increased cost to the economy.[37]

2.24 It is estimated that a further 16.25-16.3 million tonnes of primary sand and gravel will need to be permitted over the plan period to meet anticipated annual supply levels and to achieve and maintain a 7 year landbank of permitted reserves.[38]

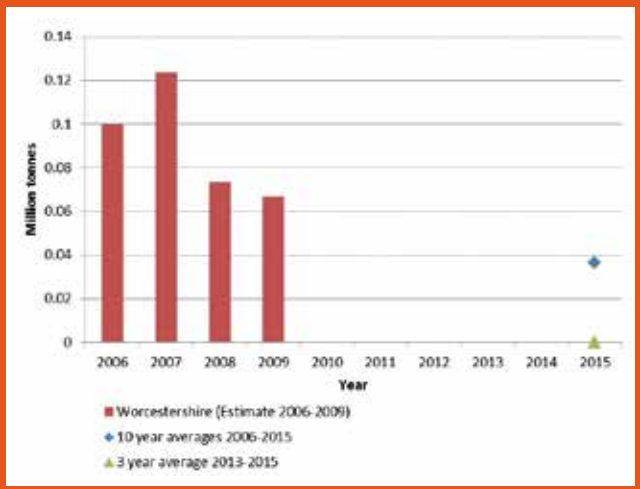
2.25 These estimates assume that the balance of sand and gravel supply continues to include substitute, secondary and recycled materials and minerals wastes at the current rate. If this contribution were to reduce, additional primary resources would be needed to fill the gap. However, a significant variation is considered to be unlikely in Worcestershire due to the established practice of recycling building materials on-site.

28 *Malvern Hills Act 1924*. Further details regarding the unique legislative context of quarrying in the Malvern Hills is set out in Background Paper: *The Malvern Hills Acts* available at www.worcestershire.gov.uk/mineralsbackground.
29 Permitted application 1986, refused application 1993.
30 Deepening permitted in 1988 and 1997
31 Extensions/deepening to existing site permitted 1996, 1998, 2001 and 2008.
32 Two calls for sites consultations were undertaken in summer 2014 and summer 2015. See "Previous Consultation Stages" pages at www.worcestershire.gov.uk/minerals.
33 Worcestershire County Council (2016) *Annual Monitoring Report: Worcestershire Local Aggregates Assessment*. This includes data up to 31st December 2015. Sales data is collected at a regional level. Long-standing confidentially arrangements agreed between the industry and government to protect operators' commercial interests means that sales data will not be released or published where there are fewer than 3 operational sites in an area. In 2012 and 2013 there were fewer than 3 operational sand and gravel sites in Herefordshire and sales data was only published for Herefordshire and Worcestershire in combination. Worcestershire Mineral Planning Authority has secured operator agreement to show Worcestershire sales figures for 2014 and 2015.
34 Worcestershire County Council (2016) *Annual Monitoring Report: Worcestershire Local Aggregates Assessment*. This includes data up to 31st December 2015.
35 Worcestershire County Council (2016) *Annual Monitoring Report: Worcestershire Local Aggregates Assessment*. This includes data up to 31st December 2015.
36 Landbank at 31st December 2015 (based on annual production guideline). *Worcestershire County Council (2016) Worcestershire Local Aggregate Assessment 2016*.
37 CBI (2016) *The UK Mineral Extraction Industry* http://news.cbi.org.uk/news/minerals-critical-to-the-uk-economy/cbi-report-the-uk-mineral-extraction-industry/
38 See **Chapter 5: Steady and adequate supply of mineral resources** for further details.

Broadway Quarry (Oolitic limestone) at Fish Hill near Broadway

Crushed rock

Figure 2.6 Crushed rock estimated annual and average sales[39]



2.26 Between 2006 and 2015 it is estimated that an average of 36,000 tonnes of crushed rock were produced each year in Worcestershire.[40] However, during this time there was only one active crushed rock working in the county (Broadway Quarry at Fish Hill, which produced limestone). This site ceased operation in 2010 and is currently undergoing restoration.[41] There are no remaining permitted reserves for crushed rock in Worcestershire.[42]

Exports and imports

Figure 2.7 Balance of aggregate exports and imports in Worcestershire 2009

	Exports	Imports	Balance
Sand and gravel	104,000	58,000	Net exporter
Crushed rock	-	192,000	Net importer
Total primary aggregates	**104,000**	**250,000**	**Net importer**

Source: Based on data in Department for Communities and Local Government (October 2011) "Collation of the results of the 2009 aggregate minerals survey for England and Wales"

Note: At the time of writing, this is the most up to date data relating to the import and export of aggregates to and from individual Mineral Planning Authority areas.

2.27 As aggregates are bulky, costly to transport and generally fairly low value they are typically only transported about 30 miles from their source.[43] In 2013 imports nationally represented 12% of the total value of UK production of construction minerals.[44]

2.28 In 2009 Worcestershire was a net importer of primary aggregates.[45] Approximately half (52%) of the sand and gravel produced in Worcestershire was used within the county and the majority (79%) was used within the West Midlands. Worcestershire was a net exporter of sand and gravel resources, but with no production of crushed rock, Worcestershire imported approximately 192,000 tonnes per annum.[46]

39 Estimated sales based on the assumption that a third of the combined crushed rock sales from Herefordshire and Worcestershire were attributable to Worcestershire, see Worcestershire County Council (2016) *Annual Monitoring Report: Worcestershire Local Aggregates Assessment*. This includes data up to 31st December 2015.
40 Worcestershire's data was combined with Herefordshire up to 2009 due to issues of commercial confidentiality. These estimates are based on the working assumption that one third of annual crushed rock supply was from Worcestershire. This has been agreed with Herefordshire Council. Details are set out in Worcestershire County Council (2014) *Local Aggregates Assessment*.
41 As of September 2016.
42 See **Chapter 5** for more discussion of mineral supply.
43 Mineral Products Association, 2012, *Make the link: The mineral products industry's contribution to the UK*
44 CBI (2016) *The UK Mineral Extraction Industry* http://news.cbi.org.uk/news/minerals-critical-to-the-uk-economy/cbi-report-the-uk-mineral-extraction-industry/
45 This is the latest data available for imports and exports of minerals on a county-scale.
46 Communities and Local Government (October 2011) *"Collation of the results of the 2009 aggregate minerals survey for England and Wales"*

The role of substitute, secondary and recycled materials and minerals waste in aggregate supply

Substitute materials

2.29 It may be possible to reduce the use of primary aggregates through the use of substitute materials in construction. However the use of substitutes will vary depending on individual development proposals.

2.30 There is no data available to indicate the level of contribution made by substitute materials in Worcestershire.

Recycled and secondary aggregates

2.31 Secondary and recycled aggregates play an important role in minimising the need for extraction of primary materials. They are cheaper than primary materials but often have a lower specification. In 2013 recycled and secondary aggregates accounted for 29% of total UK aggregates sales. These are the highest levels in Europe.[47]

Recycled aggregates

2.32 Recycled aggregates arise from several sources, notably from the demolition of buildings or from civil engineering works such as road resurfacing (producing asphalt planings) and railway track maintenance (producing 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.

2.33 A significant amount of recycled aggregates are produced in Worcestershire from the management of construction and demolition waste (C&D waste). This could provide up to 420,000 tonnes of recycled aggregates per year.[48] The supply of recycled materials will depend on the county's capacity to process these materials. The *Waste Core Strategy* sets targets for capacity at static plant, but due to data limitations it is not possible to monitor the role of mobile plant.

Secondary aggregates

2.34 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, such as blast furnace/steel slag, power station ash, incinerator ash or spent foundry sand.

2.35 There are currently no industrial processes in Worcestershire which are known to produce secondary aggregates. However, there is potential for some provision of secondary aggregates in the future:

- An Energy from Waste Plant is currently under construction at Hartlebury, near Kidderminster.[49] This plant is predicted to produce 40,000 tonnes per annum of incinerator bottom ash which may be capable of being used as secondary aggregate, although further processing would be required to enable this.
- A separate application was submitted for a facility to process 120,000 tonnes per annum of incinerator bottom ash at Veolia's Sandy Lane site near Bromsgrove.[50]

Recycling road planings at Stanford Highway Depot, near Kidderminster.

47 European average 10%. CBI (2016) *The UK Mineral Extraction Industry* http://news.cbi.org.uk/news/minerals-critical-to-the-uk-economy/cbi-report-the-uk-mineral-extraction-industry/

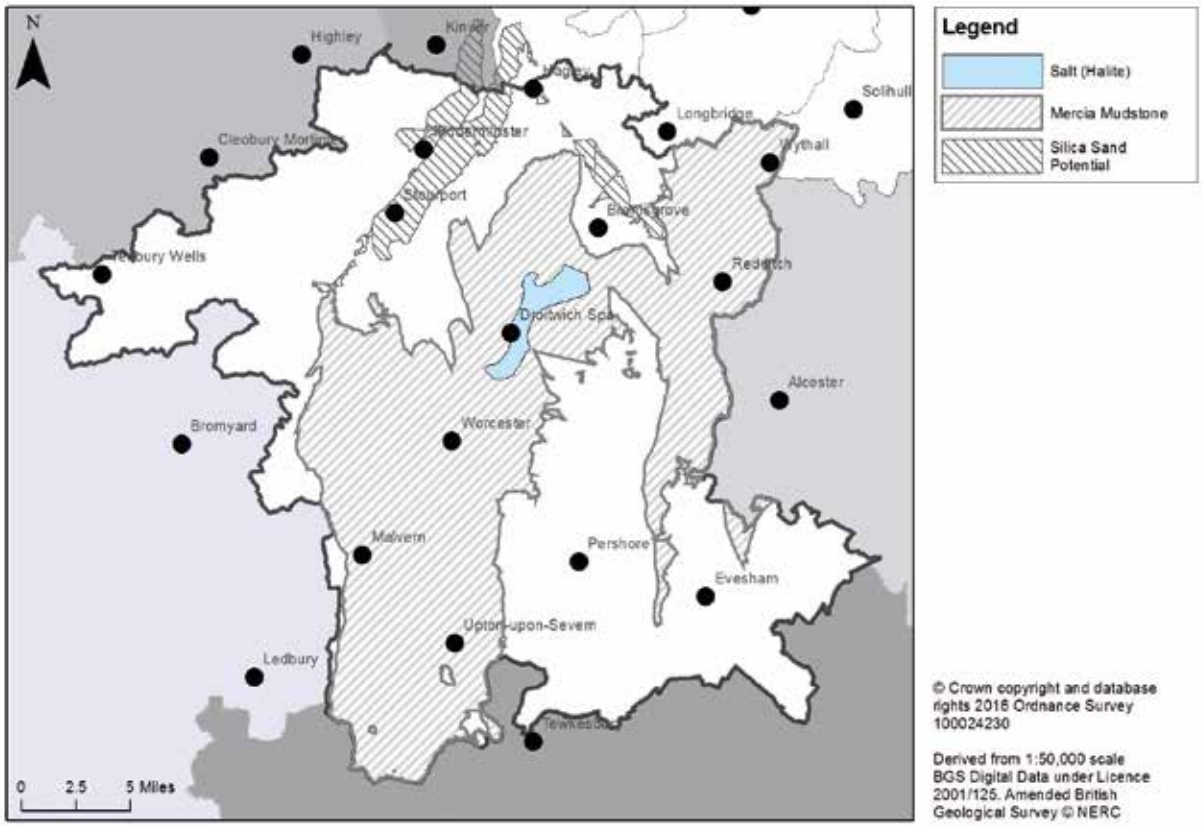
48 See *"Waste Core Strategy for Worcestershire"* for further details at www.worcestershire.gov.uk/wcs.

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

50 Planning application 13/000027/CM. The application was refused by the Mineral Planning Authority in November 2016 as it was not considered to be in an appropriate location.

Industrial minerals

Figure 2.8 Industrial minerals in Worcestershire



Working Solid Sands at Pinches near Bromsgrove

Silica Sand

Primary materials

2.36 Silica sand is a type of industrial sand valued for both its chemical and physical properties; particular uses often require different combinations of properties, and different grades of silica sand are not usually interchangeable. Silica sands are essential raw materials for glassmaking and the foundry industry, and also have a wide range of applications in other sectors including horticulture.

2.37 The silica sand which occurs in Worcestershire is found in the Wildmoor Sandstone Formation. This is known as naturally bonded moulding sand. This material was historically important in the foundry industry, where it was used as the main mould and core-making material for both ferrous and non-ferrous castings. Today the demand for foundry sand is principally for high silica, clay-free (washed) and synthetic sands, which

can more easily be controlled to meet precise specifications. These types of silica sands are not found in Worcestershire. This market shift explains why sales of silica sand from Herefordshire and Worcestershire were 80% lower in 2010 than in 1999.[52]

2.38 Silica sand is currently worked at two sites in the Wildmoor Sandstone Formation in Worcestershire, both of which are north of Bromsgrove in the Wildmoor area. At both sites silica sand is found and worked alongside sand for aggregate purposes. In 2013, just 2,000 tonnes of sand for foundry uses was sold from Worcestershire.[53] Information regarding the occurrence of silica sand beyond the boundary of these sites is limited. The operators of both sites in Worcestershire have expressed the opinion that they have adequate permitted reserves of silica sand for the plan period.

Imports and exports

2.39 Although Worcestershire is one of only eight areas that produces sand for foundry use it contributes less than 1% of national supply.[54]

The role of substitute, secondary and recycled materials and minerals waste in the supply of silica sand

2.40 Different grades of silica sand are not usually interchangeable and secondary and recycled materials are not suitable replacements for silica sand. However the role of the naturally bonded moulding sand found in Worcestershire has diminished in recent years partly due to the availability of synthetic substitutes.

2.41 In Worcestershire, silica sands are worked as an ancillary activity to the working of aggregate sands and would be suitable for aggregate use.

Brick clay

Primary materials

2.42 Clay is used mainly in the manufacture of structural clay products, such as facing and engineering bricks, pavers, clay tiles and vitrified clay pipes, with brick manufacture being the largest use across the UK.[55] Clays may also be used for construction fill and for lining and sealing landfill sites.[56] The types of clays found in Worcestershire are predominantly used in the manufacture of bricks and related products.

2.43 The suitability of clay for manufacturing structural clay products depends principally on its behaviour during shaping, drying and firing. Historically, small brickworks produced bricks from local raw materials; however, both nationally and locally the brick industry is now based on a small number of plants operated by a limited number of companies.[57] Modern brickmaking technology requires high capital investment and is dependent on the availability of raw materials with predictable and consistent firing characteristics.[58]

52 Department of Communities and Local Government (February 2013) *Mineral Extraction in Great Britain 2011: Business Monitor PA1007* accessed 17.02.2015 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/138294/Mineral_extraction_in_Great_Britain_2011.pdf table 1

53 Department for Communities and Local Government (February 2015) *Mineral extraction in Great Britain 2013, Business Monitor PA1007* (Table 1 – Industrial sand)

54 Department for Communities and Local Government (February 2013) *Mineral extraction in Great Britain 2011, Business Monitor PA1007* (Table 1 – Industrial sand)

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

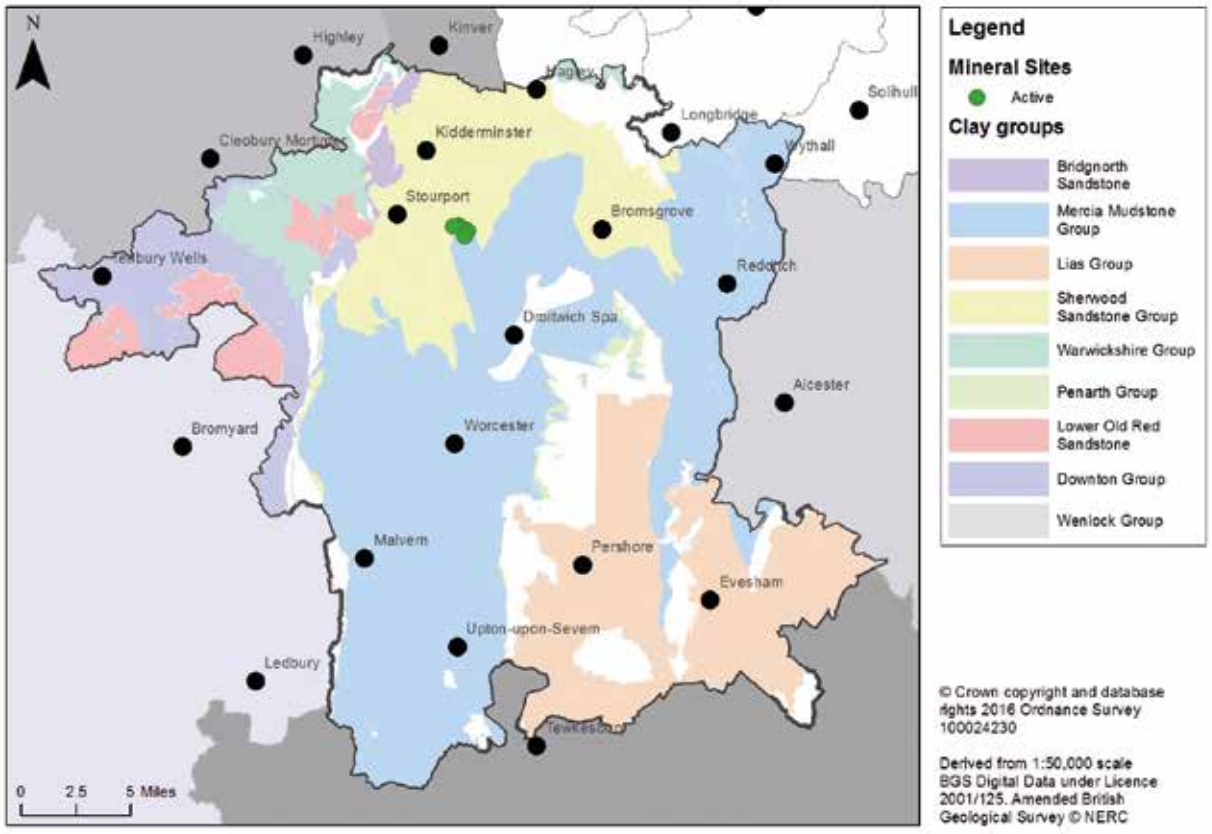
56 British Geological Survey and Department of the Environment, Transport and the Regions, 1999, *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*

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

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

Sand and gravel processing

Figure 2.9 Clay groups in Worcestershire



2.44 There are 9 different geological groups in Worcestershire that possess some clay properties.[59] The Historic Environment Record shows evidence of 341 small-scale clay workings or brickworks across the county and the 1880s Ordnance Survey map shows 2,276 clay pit sites and 152 brick works or kilns in Worcestershire. The distribution of these sites suggests that all of the different clay groups found in the county have been used to some extent in the past. However, modern planning applications for clay extraction in Worcestershire have all been limited to a localised area near to Kidderminster, working the formations of the Mercia Mudstone Group. Clay from the Mercia Mudstone Group in this area has consistent forming and firing properties and a relatively low firing temperature.[60] Whilst the Mercia Mudstone Group is found extensively across the south west, central and north eastern parts of the county, the suitability of the these formations for brickmaking is largely unknown.[61]

Remains of roman clay oven found in Worcestershire

59 Bridgnorth Sandstone Group, Mercia Mudstone Group, Lias Group, Sherwood Sandstone Group, Warwickshire Group, Penarth Group, Lower Old Red Sandstone Group, Downton Group, Wenlock Group.

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

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

2.45 Clay is currently worked at two sites in Worcestershire, both of which have associated brick works. Together the sites are capable of producing over 2 million bricks per week and a range of pipes and tiles:

- **New House Farm Quarry and Hartlebury Brickworks:** extraction activities are restricted to 6 to 8 weeks per year, with brick production taking place throughout the year. The operation has two production lines: the older part of the factory makes traditional solid stock bricks ideal for refurbishment and restoration while the modern factory (built in 1985) produces extruded products mainly for new housing.[62]
- **Waresley Quarry and Brickworks:** The factory was built in 1989 to extend the range of products already being manufactured at the nearby Hartlebury site. The facility is able to produce both extruded bricks for use in house building and soft mud moulded bricks which provide an effect similar to older bricks for use in conservation.[63]

New House Farm Quarry (brick clay) near Hartlebury

Sales and production of brick clay in Worcestershire

2.46 Sales of brick clay from Worcestershire are approximately 130,000 tonnes per annum,[64] with Worcestershire contributing approximately 4% to national supply levels and providing the fifth largest supply of clay for brick, pipes and tiles from a single mineral planning authority area. However the industry has been subject to significant fluctuation in recent years.

2.47 The county's stock of permitted reserves of brick clay is approximately 75 years[65] and this is supported by existing infrastructure for brick manufacture which is anticipated to remain in use beyond the life of the plan. There is a single operator in the county and only two sites for brick clay with associated brick works, so Worcestershire's supply of brick clay, bricks and brick products could be vulnerable to market decisions. This means that there needs to be flexibility to allow other proposals to come forward.

2.48 At the start of 2009, 90% of UK brick factories were temporarily closed, or on short time working.[66] In Worcestershire only one site was operating at full capacity in 2010. Supply has now increased following the recommissioning of Hartlebury Brickworks which was completed in 2015. Nationally there has been an overall decline in sales of brick clay, bricks and brick products. This pattern is thought to be related in part to the downturn in housebuilding, with new housing accounting for about 60% of the brick clay market. However, much of the observable decline in brick production could also be due to the demise of 'common bricks' which have been replaced by other building materials in cavity walls and internal walls; together with a trend towards building smaller houses and flats (which require fewer bricks per unit) and changing building methods (including timber frame).[67]

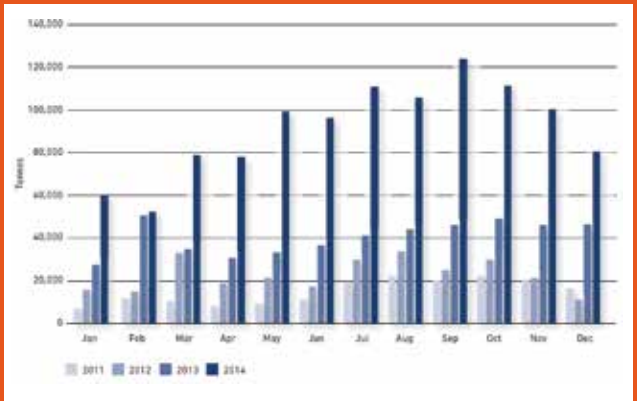
62 Wienerberger (2014) *Sustainability at Hartlebury Works* [online] Available from: http://www.wienerberger.co.uk/sustainability-at-hartlebury-works.html [Accessed on 24.07.2014]
63 Wienerberger (2014) *Sustainability at Waresley Works* [online] Available from: http://www.wienerberger.co.uk/sustainability-at-waresley-works.html [Accessed on 24.07.2014]
64 10 year average based on *Mineral Extract: Great Britain Reports 2002 – 2011*, Data for Worcestershire only published for 2011, 2010, 2006.
65 Estimated to be 71 years based on correspondence with Weinerberger (02.12.2014) or 78 years based on sales average (Mineral Extract: Great Britain Reports 2002 – 2011) and Weinerberger estimate of permitted resource (02.12.2014).
66 *Memorandum from the British Ceramic Confederation (WM 04) regarding the impact of the current economic and financial situation on businesses in the West Midlands Region* - West Midlands Regional Committee 31st July 2009 http://www.publications.parliament.uk/pa/cm200809/cmselect/cmwestmid/409/409we05.htm.
67 UK Minerals Forum (2014) *Trends in UK Production of Minerals* [online] Available from: http://www.bgs.ac.uk/ukmf/downloads/Trends%2520in%2520UK%2520Production%2520of%2520Minerals_08012014.pdf [Accessed on 15.07.2014] p.17


Common bricks used in construction

Imports and exports

2.49 Import volumes of clay bricks increased six-fold between 2011 and 2014.[68] In 2015 the UK imported between 50,000 and 90,000 tonnes of bricks per month.[69] Bricks can be costly to transport long distances and the scope to use substitutes is limited, so there is a need to secure a long term domestic supply.

Figure 2.10 UK supply of Brick clay 2011 to 2014



Source: CBI (2016) *The UK Mineral Extraction Industry* http://news.cbi.org.uk/news/minerals-critical-to-the-uk-economy/cbi-report-the-uk-mineral-extraction-industry/.

2.50 Imports and exports of clay across county and regional boundaries are also commonplace. Customers often choose bricks based on aesthetic qualities. Blending different clays to achieve improved durability, and to provide a range of colours and aesthetic qualities is also an increasingly common feature of the brick industry.[70]

2.51 Worcestershire is a net exporter of bricks and plays a significant role in the supply of brick clay and brick products both locally and nationally. This role has been maintained, to a greater or lesser extent, since at least the 1980s. Official data on overall levels of supply and demand is limited,[71] but discussions with industry indicate that less than 10% of the bricks produced in Worcestershire are sold in the county.[72]

The role of substitute, secondary and recycled materials and minerals waste in the supply of clay, bricks and brick product

2.52 There has been a decline in the use of 'common bricks' in recent years due to changes in building methods and the increased use of substitute building materials.[73]

2.53 However, there is limited scope to substitute clay in brick manufacture itself. In the past, colliery waste was used extensively in brickmaking, but this is now limited because colliery waste can be highly polluting when fired and isn't consistent enough in composition for mechanised manufacturing methods.[74] Pulverised Fuel Ash (PFA), Incinerator Bottom Ash (IBA), granular blast furnace slag, ground recycled glass, and even some waste organic materials including sawdust, straw and water treatment sludge have been used to some extent in brick manufacture. However, there is little evidence available to estimate the contribution that these types of materials may make to the overall supply of brick clay or whether this is likely to change in the future.

68 CBI (2016) *The UK Mineral Extraction Industry* http://news.cbi.org.uk/news/minerals-critical-to-the-uk-economy/cbi-report-the-uk-mineral-extraction-industry/
69 January – July figures given in presentation to RTPI/MPA Conference: Securing a sustainable supply of Minerals 20th May 2015 UK Minerals Strategy (Hugh Lucas).
70 British Geological Survey and Department of the Environment, Transport and the Regions, 1999, *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*
71 Only limited data for brick clay sales from Worcestershire is published due to confidentiality arrangements.
72 This is based on information from one operator only but is indicative of the market situation [confidential correspondence December 2012]
73 UK Minerals Forum (2014) *Trends in UK Production of Minerals* [online] Available from: http://www.bgs.ac.uk/ukmf/downloadsTrends%2520in%2520UK%2520Production%2520of%2520Minerals_08012014.pdf [Accessed on 15.07.2014] p.17
74 British Geological Survey (2007) *Mineral Planning Fact sheet: Brick Clay* [online] Available from: http://www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html [Accessed on 14.07.2014] p.11

2.54 The re-use of bricks to match styles in building conservation is common. However this is generally limited to buildings over 60 years old, as the lower-strength lime mortars used at that time make the bricks relatively easy to separate and clean. Newer Portland cement-based mortars are much stronger and impractical to remove,[75] so bricks from newer buildings (with the mortar attached) are more often crushed and re-used as low-quality aggregate. Re-using bricks is often more costly than purchasing new bricks because the reclamation process is so labour intensive; however, it can be essential for specialised conservation works, and the importance of matching styles can offset the increased cost in these types of projects.

Salt and brine

Primary materials

2.55 Rock salt occurs in the Droitwich Halite Member which underlies an area around Droitwich and Stoke Prior to the north-east of Worcester, although the southern limit of the salt deposits is not known.[76] The salt bearing strata are found at a significant depth and in relatively thin beds, mostly less than 4m thick.[77]

2.56 Salt can be extracted in two forms: as a solid rock salt, or as liquid brine. Brine is created where ground water percolates through and dissolves the rock salt. Historically, rock salt was mined at Stoke Prior until the workings flooded, and brine was extracted by pumping until the 1970s when operations were closed due to subsidence problems affecting Droitwich and the surrounding area.[78] Whilst there is some geological information available regarding the geographic extent of solid rock salt (halite) in Worcestershire, there is very little information regarding the extent of brine due to the complex hydrology of the area. Historic information suggests that it is not just limited to the areas of the county which are in proximity to the rock salt deposits, with brine being pumped in Tenbury Wells in the past.

2.57 There are currently no workings or planning permissions for salt or brine extraction in Worcestershire. Due to the nature of the deposits and the significant subsidence that resulted from working these resources in the past it is not considered likely that it will be commercially attractive to work salt and brine deposits in Worcestershire in the future. Some interest has been expressed for small scale extraction for tourism purposes,[79] and it is possible that this could be achieved by capturing brine from natural springs without the need for pumped extraction.

75 British Geological Survey (2007) *Mineral Planning Fact sheet: Brick Clay* [online] Available from: http://www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html [Accessed on 14.07.2014] p.11

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

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

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

79 Droitwich Spa Town Council response to Second Stage Consultation on the Minerals Local Plan (response reference B005-564 nq) stated that the Town Council wishes to see brine used in spa bathing and for possible souvenir salt production. The full comment can be viewed in the Second Stage Consultation Response Document at www.worcestershire.gov.uk/minerals.

Preserved historic pump at Gurney's Lane Brine Pumping Station, Droitwich

Imports and exports

2.58 With no production of salt or brine in the county, Worcestershire is an importer of these products. In 2012 most national supply was met from extraction in Cleveland and Cheshire.[80]

The role of substitute, secondary and recycled materials and minerals waste in the supply of salt and brine

2.59 There is limited scope for the use of these materials in the supply of salt and brine.

Building stone[81]

Primary materials

2.60 Stone buildings commonly reflect the local geology, imparting local distinctiveness to historic towns, villages and rural landscapes. The use of local building stone contributes significantly to the character of some areas of Worcestershire. In some cases this is extensive and local building stone has been used in walls, paving stones and a variety of buildings, whilst in other areas its use is limited to features such as bridges, churches and monuments.

2.61 Granite, limestone, sandstone, tufa, breccias and quartz and quartzite pebbles have all been worked historically in Worcestershire for use as building stone:[82]

- **Granite:** The hard rocks of the Malvern Complex were used locally as a building stone, and many houses, churches and walls in and around Malvern are constructed with the pink, coarse-grained granite blocks contrasting with the finer-grained, grey diorite blocks.
- **Limestone:** The Inferior Oolite Group provides the typical Cotswold stones in the eastern and south eastern parts of the county: these limestones have been used in nearly all the buildings in the settlements around Bredon Hill and Broadway as well as being used considerable distances from their source in many towns and villages in the county. Wenlock Limestone was widely used on cottages, farm buildings and walls in the areas between Alfrick and Abberley.
- **Sandstone:** Highley Sandstone has been used in the churches and cottages in Mamble, Bayton and Abberley, as well as in bridges across the River Severn and the Severn Valley Railway, the Guildhall entrance in Bewdley and the clock tower at Abberley Hall. Bromsgrove Sandstone has been extensively used for churches, public buildings, cottages and boundary walls in the Kidderminster and Bromsgrove areas, as well as at Hartlebury Castle and parts of Harvington Hall. Bridgnorth Sandstone was widely used in the Bewdley area.
- **Tufa:** Tufa was used in the vaulting of Worcester Cathedral. St Andrew's Church in Shelsley Walsh is also largely built with Tufa.
- **Breccias:** Breccias were a significant building stone in Far Forest near Bewdley and the isolated cottages of the Wyre Forest.
- **Quartzite pebbles:** Quartzite pebbles have been used in the pavements and gutters in Chaddesley Corbett and Bewdley.

80 Department for Communities and Local Government (2014) *Mineral extraction in Great Britain 2012 Business Monitor PA1007* (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/285128/Mineral_extraction_in_Great_Britain_2012_-_Business_Monitor_PA1007.pdf.

81 For the purpose of this document, the term "building stone" incorporates building, walling, roofing and dimension stones.

82 English Heritage, 2012, *Strategic Stone Study: A Building Stone Atlas of Worcestershire.*

2.62 Although many building stones were locally important and continue to contribute to local character, Worcestershire's building stones tend to be of relatively poor quality and therefore not of wider significance. Nationally, there are concerns about ensuring the continued supply of natural local building stones for the appropriate restoration and repair of historic buildings. Locally the importance of using appropriate materials to maintain the vernacular and historic character of the county is recognised.

2.63 Although a significant number of disused building stone quarries have been identified in the county,[83] there are currently no workings or planning permissions for building stone in Worcestershire. However, specific conservation projects may call for a particular type of stone and it is possible that this may encourage building stone extraction in the county. Geological features that contain high-quality building stones are often within designated areas such as Areas of Outstanding Natural Beauty.

2.64 Demand for natural building stone products is variable and difficult to quantify, as the industry supplies a large range of end products to several market sectors. Customers for these products range from individuals to major house builders.[84] There are three main subdivisions within the market:

- Repair and maintenance of historic buildings and structures;
- Maintaining vernacular styles in new construction;
- Contemporary design requirements for new buildings.

The intermittent nature of the demand for specific building stones may lead to workings lying dormant for some time.

Imports and exports

2.65 There is no specific information available about the demand for local building stone within Worcestershire. However, restoration and repair works on important stone buildings and structures throughout the county have been carried out using stones imported from other parts of the UK and beyond, where this stone is considered to be the best available match for the original stone.[85] Buildings and structures that have been repaired in this way include the quayside in Bewdley, which was originally constructed with Holt Stone and Alveley Stone and was recently repaired using a similar sandstone from Cumbria. Worcester Cathedral, Hartlebury Castle and several parish churches have been restored using red and grey Hollington Stone from Staffordshire, which is considered an acceptable match for the original Bromsgrove Sandstone[86].

The role of substitute, secondary and recycled materials and minerals waste in the supply of building stone

2.66 There can be significant variations in the appearance and characteristics of building stone, even within the same broad stone type. The best stone to use for conservation and repair is almost always the original stone from the same quarry as this ensures the best possible match.[87] Substitute stone or mortar, or the use of substitute materials such as brick, may compromise the stability and structural integrity of the building or feature in which it is used. The appropriate use of reclaimed building stone, such as from demolition or site excavations during building works or highway construction, can play an important role in reducing the need for primary materials.

Worcester Cathedral

83 Herefordshire and Worcestershire Earth Heritage Trust, *"A Thousand Years of Building with Stone"*, http://www.buildingstones.org.uk/

84 Thompson, A. et al. (2004) *Planning for the Supply of Natural Building and Roofing Stone in England and Wales (The Symonds Report)* Office of the Deputy Prime Minister, London.

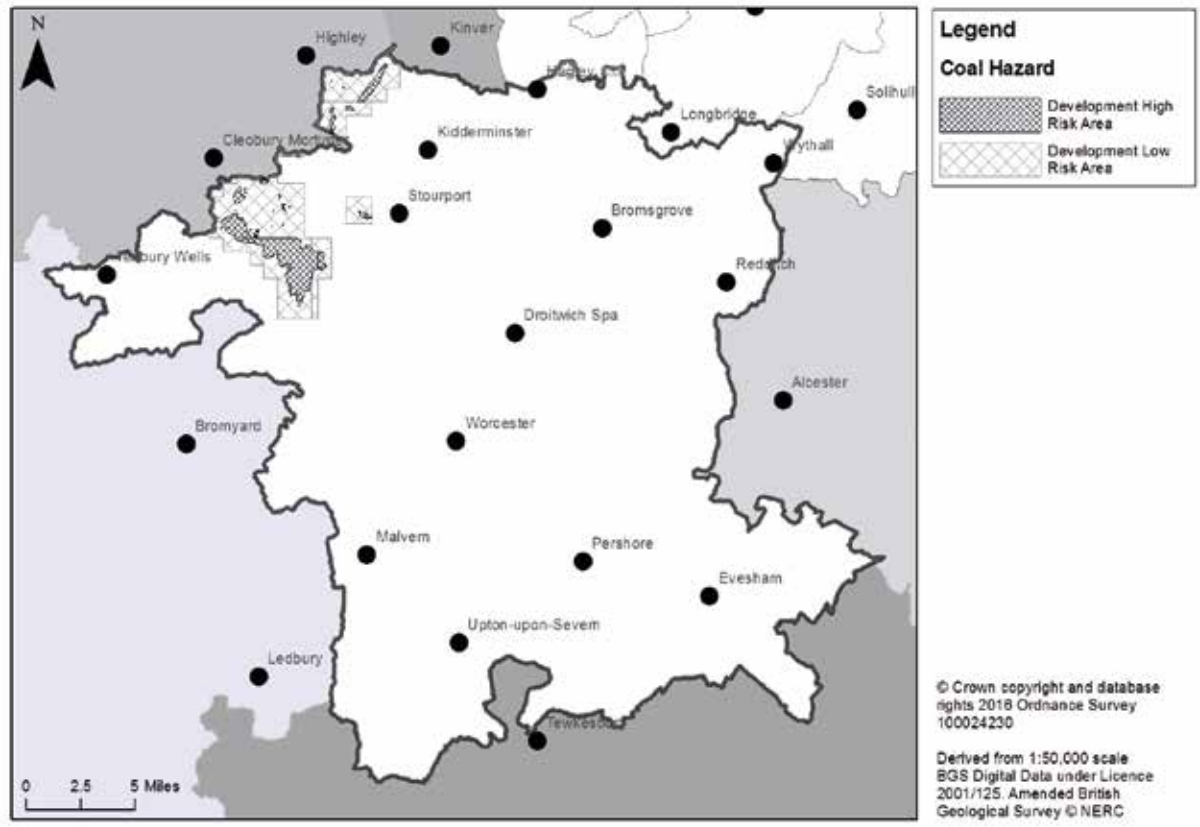
85 Oliver, P., and Lott, G. (Ed.) (2012) *Strategic Stone Study: A Building Stone Atlas of Worcestershire English Heritage*.

86 Oliver, P., and Lott, G. (Ed.) (2012) *Strategic Stone Study: A Building Stone Atlas of Worcestershire* English Heritage.

87 Jefferson, D., Hanna, S. and Martin, B. (2006) *Identifying and Sourcing Stone for Historic Building Repair: An approach to determining and obtaining compatible replacement stone* English Heritage.

Energy minerals

Figure 2.11 Energy minerals in Worcestershire



Coal

2.67 In Worcestershire there are two small areas where geological information suggests that coal may be present. One small area to the north of Bromsgrove lies at the southern end of the South Staffordshire Coalfield.[88] Another area to the north and west of Kidderminster lies at the southern end of the Wyre Forest Coalfield.[89] These coalfields extend to the north of the county. However coal has not been worked in Worcestershire since the 1970s and the latest data issued by the Coal Authority indicates that none of the coal remaining in the county constitutes a "surface coal resource" that is likely to attract further interest.

2.68 Former workings have left a legacy of mining features and hazards in parts of Wyre Forest district which are locally significant and may cause issues of land stability.

Carbonaceous material at Berrow Hill, (courtesy of Herefordshire and Worcestershire Earth Heritage Trust)

88 Productive coal measures are absent. British Geological Survey and Department of the Environment, Transport and the Regions, 1999, *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*

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

Hydrocarbons

2.69 There is no evidence that conventional hydrocarbons (oil, natural gas and coalbed methane) or unconventional hydrocarbons (shale oil or gas) exist in Worcestershire.

2.70 One exploration well for oil and gas has been drilled in the county and another just beyond the border with Herefordshire. Neither of these discovered oil or gas. Based on current evidence[90] the county is not considered "prospective" for coalbed methane. In addition, although coal-bearing and shale strata exist in the county, there is no evidence to suggest that these contain unconventional hydrocarbons such as shale gas and no blocks were licensed in or near to Worcestershire under the 14th Onshore Oil and Gas Licensing Round.[91]

Imports and exports

2.71 Worcestershire is a net importer of energy due to a lack of primary energy resources in the county. There are no commercial power stations in the county fuelled by coal or hydrocarbons.

The role of substitute, secondary and recycled materials and minerals waste in the supply of energy

2.72 The county's landlocked position and relatively limited resources also mean that it is unlikely to become a leading producer of renewable energy in the national context. However, as of October 2015, there was around 115 MW of installed or consented 'larger-scale' (0.5 MW or greater) renewable energy capacity in the county, mainly derived from solar photovoltaic panels.[92] There are now numerous installations in Worcestershire generating energy from household, agricultural, and horticultural waste. These include landfill gas engines and anaerobic digestion plants which produce biogas from organic material.

2.73 It is anticipated that the energy from waste facility under construction at Hartlebury will provide 13.5MW of electricity to the grid.

Plant for concrete batching and manufacture of coated materials

2.74 Concrete and asphalt are fundamental to modern built development. The two materials are different in nature but have many elements in common, not least because both are major users of aggregates and involve similar environmental issues.

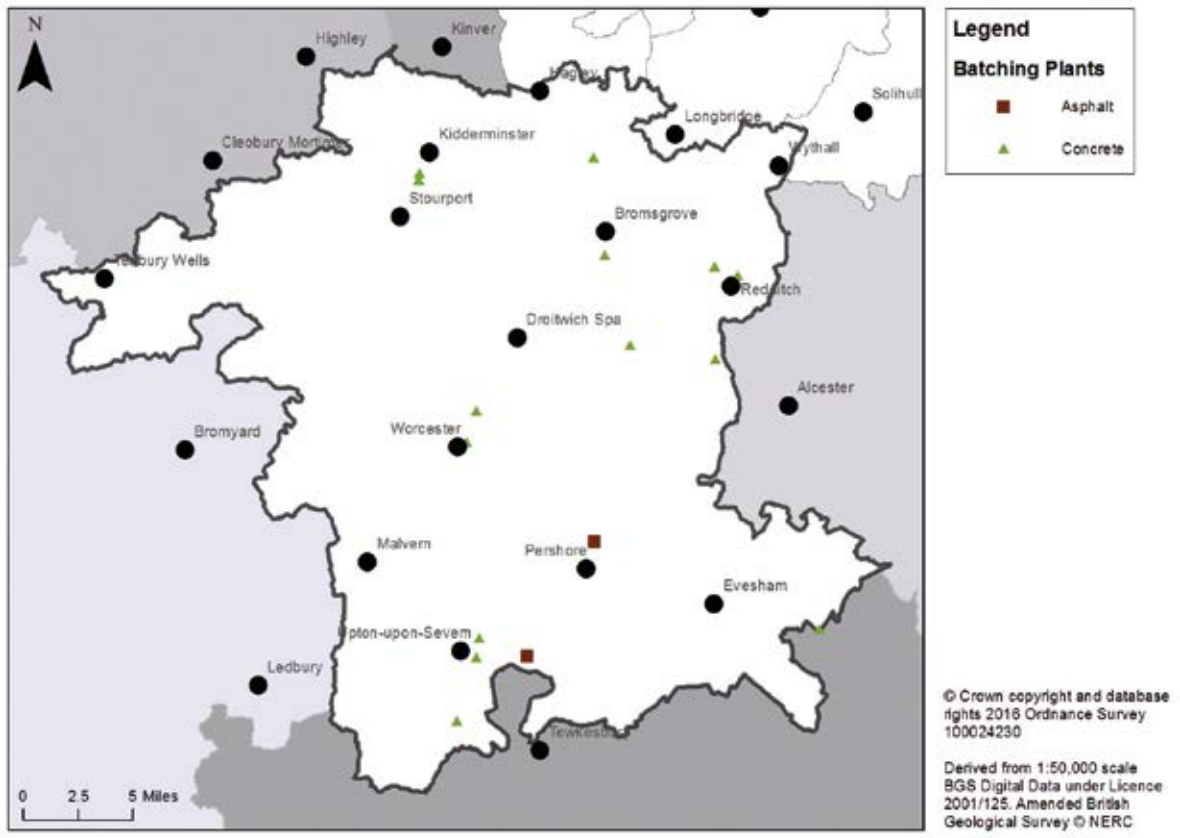
2.75 Concrete (a mixture of cement, aggregates and other materials) is our most widely used construction material and is essential for the sustainable development of our housing, schools, hospitals, transport networks, energy infrastructure and our built environment.

2.76 Asphalt is primarily used for road construction, its properties being dependent upon the type, size and amount of aggregate used in the mixture. The production process involves blending the aggregates and then heating them to a temperature suitable for coating with a bitumen binder.

2.77 Perishability is an important factor in relation to the geographic scope of relevant markets. Asphalt and ready-mix concrete are best used a short time after production. A network of batching plants enables these products to be supplied in the specifications and at the time needed. There are 14 ready-mix concrete plant and two asphalting plants in Worcestershire (see **Figure 2.13**).[93]

90 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints*.
91 Information about the Onshore Oil and Gas Licencing Rounds is available at https://www.gov.uk/guidance/oil-and-gas-licensing-rounds.
92 Worcestershire County Council (2015) *Renewable Energy Research Paper Consultation Draft February 2015*.
93 Worcestershire County Council (2015) *Background Document: Concrete Batching and Asphalting Plants in Worcestershire*.

Figure 2.12 Batching plant in Worcestershire

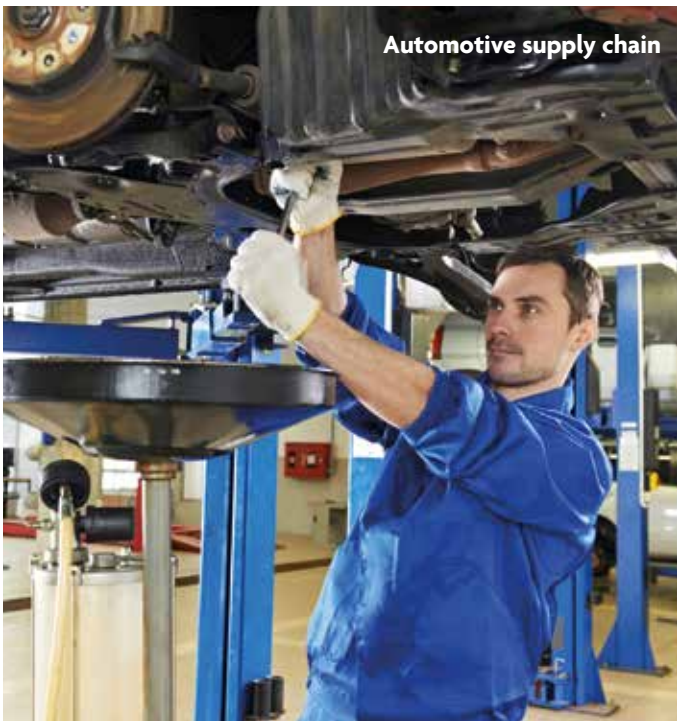


Worcestershire's economy

Current performance

2.78 Worcestershire has a highly diversified economy with a wide range of businesses, many of them international, operating successfully in the county. The dominant sectors in terms of employment are manufacturing, health, retail and education.[94] There is a solid industrial heritage and 14% of the working population is employed in manufacturing, including the automotive supply chain and traditional industries such as carpet weaving, needles and textile manufacture.[95]

2.79 The visitor economy is important in the county. Tourism expenditure in the county accounts for £538 million and 10% of the workforce are employed within this sector. There are 738,000 domestic trips and 101,000 international trips to Worcestershire annually, with domestic day visitors accounting for 71% of tourism revenue.[96] Cyber security and defence are also growing


Automotive supply chain

94 Worcestershire County Council (2012) *Worcestershire County Economic Assessment 2010-2011*
95 http://www.wlep.co.uk/about/worcestershire/key-sectors/
96 Between 2008 and 2010. For more detail see Worcestershire County Council (September 2014) *Green Infrastructure Framework 4: Socio-economic Benefits of Green Infrastructure.*

in importance. Many of these are spin-out companies from QinetiQ in Malvern and the Malvern Hills Science Park, and are concentrated in the south of the county.[97]

2.80 Agri-tech, horticulture and food production is also strong in Worcestershire due to high quality soils (the Agricultural Land Classification[98] shows that over 80% of the county is classified as having either grade 1, 2 or 3 land, with Grade 1 being the highest quality)[99] and the county's central location means produce can be picked and packed and on supermarket shelves within two days.[100] The presence of high quality soils in Worcestershire, particularly in the Vale of Evesham, has led to world class production standards for a range of crops including asparagus. There has also been a high level of investment in commercial glasshouses which has made this an important region for tomato growing.[101] However, the need for effective water resource management in the county has become more urgent. Lack of water is an increasing issue, especially for those businesses in the county reliant on water abstraction, such as agriculture and horticulture.[102]

2.81 Alongside the production of food, timber and other resources, land in agricultural or horticultural production provides a number of key ecosystem services. These ecosystem services can include soil formation, nutrient cycling, carbon sequestration, water regulation and purification, genetic resources, pest regulation and pollination.

2.82 There is a significant crossover between the location of mineral resources and high quality agricultural land,[103] particularly clay (which is found across most of the county) and the sand and gravel deposits along the county's river valleys.

2.83 Mineral production is fundamental to the workings of the economy, providing the materials needed for construction and a range of industrial processes and representing 16% of the total UK economy.[104] In Worcestershire the minerals and waste sector saw a 50% increase in economic output[105] between 2007 and 2012 and contributes an estimated £83.8million to the local economy.[106] In addition to the direct contribution the minerals sector makes, it is also essential to infrastructure provision in the county and facilitates future growth.

97 http://www.wlep.co.uk/about/worcestershire/key-sectors/
98 The Agricultural Land Classification (ALC) system classifies land into five grades according to a number of criteria, including climate (temperature, rainfall, aspect, exposure, frost risk), site (gradient, micro-relief, flood risk) and soil (depth, texture, stoniness). Grade 1 is the best quality and grade 5 the poorest quality, with Grade 3 subdivided into sub-grades 3a and 3b. The best and most versatile land is defined as Grades 1, 2 and 3a in national policy. Information is not available at a county scale regarding the split between 3a and 3b land.
99 Worcestershire County Council (December 2011) *Technical Research Paper: Planning for Soils in Worcestershire.*
100 Worcestershire Local Enterprise Partnership (2012) *The Outlook is Bright in Worcestershire Business Plan 2012*
101 European Food and Farming Partnerships (2011) *Full report: Getting to the Heart of Horticulture.*
102 The Worcestershire Partnership (2012) *Worcestershire Climate Change Strategy 2012 – 2020: A Framework for securing a low carbon & climate resilient County.*
103 Grade 1,2 and 3 land.
104 £235bn in gross value added by production of raw materials. CBI (2016) *The UK Mineral Extraction Industry* http://news.cbi.org.uk/news/minerals-critical-to-the-uk-economy/cbi-report-the-uk-mineral-extraction-industry/
105 GVA, see Worcestershire County Council (2015) *Worcestershire Mineral and Waste Local Development Framework Annual Monitoring Report April 2014 – March 2015.*
106 GVA from Minerals and Waste sector 2012, see Worcestershire County Council (2015) *Worcestershire Mineral and Waste Local Development Framework Annual Monitoring Report April 2014 – March 2015.*

Agriculture in Worcestershire

Strategic infrastructure supported by mineral development, Worcester 6

Future trends

2.84 Significant development is planned in Worcestershire, with the county's population expected to grow by approximately 5% in the next 10 years, and ambitious development targets across the county of over 40,000 new houses and 400ha of employment land.[107] Growth will be predominantly focused on the fringes of the existing urban settlements of Worcester, Bromsgrove, Redditch and Kidderminster, maintaining and reinforcing the current distribution of population.

2.85 The county's "Open for Business" agenda[108] aims to attract new investment and businesses and to support expansion of local industries. The Worcestershire Local Enterprise Partnership is focused on key sectors of Worcestershire's economy which reflect local specialisms, these being manufacturing, cyber security, defence and IT, and agri-tech.[109] The destination and visitor economy and high value added professional and business services will also form an important focus for growth.[110] Three local authorities[111] in Worcestershire are also part of the Greater Birmingham and Solihull Local Enterprise Partnership which is taking a triple-track approach,[112] supporting high-growth, high-value added sectors (advanced manufacturing; life and health sciences; digital and creative; business, professional and financial services; low carbon and environmental technologies and services), high-volume, high job-creation sectors (tourism and hospitality; business, professional and financial services; food and drink; healthcare; construction) and sectors with high foreign direct investment potential (ICT; automotive and manufacturing; food and drink; logistics; life and health sciences).

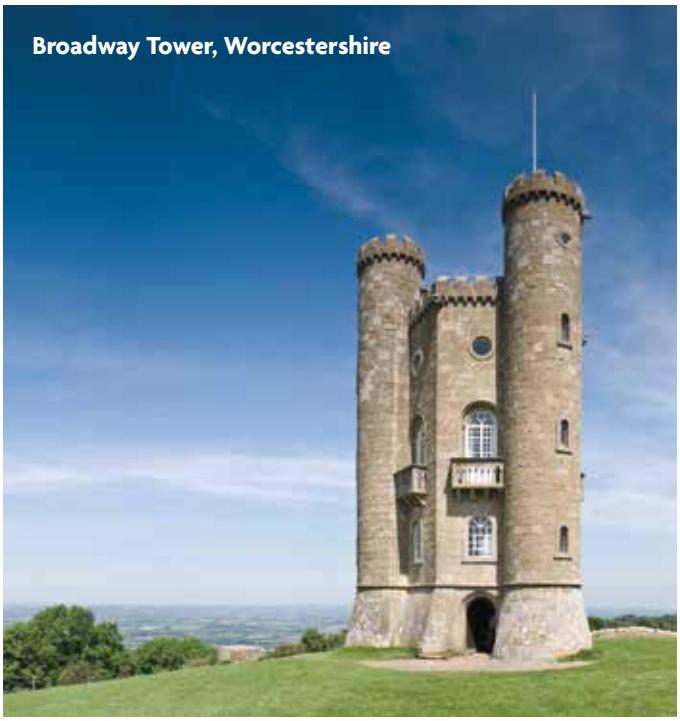
2.86 Minerals, particularly aggregates and brick clay, will be required to support this growth and deliver the new homes, businesses and infrastructure required.

107 Combined figures from development plans in the county.
108 Worcestershire County Council (2013) *Worcestershire Future Fit: Corporate Plan Refresh 2013-2017*
109 Worcestershire Local Enterprise Partnership (2014) *World Class Worcestershire: Our Strategic Economic Plan*. Note: for the purposes of the Strategic Economic Plan, the definition of the 'agri-tech' sector is the supply chain spanning seeds, agro- chemicals, machinery, engineering, skills and other inputs including green energy, across arable and livestock agriculture, forestry horticulture, food processing, packaging and retailing.
110 Worcestershire Local Enterprise Partnership (2014) *World Class Worcestershire: Our Strategic Economic Plan.*
111 Bromsgrove District Council, Redditch Borough Council and Wyre Forest District Council.
112 The Greater Birmingham & Solihull Local Enterprise Partnership (May 2013) *The Greater Birmingham & Solihull Local Enterprise Partnership Strategy for Growth: Delivering Growth Strategic Framework.*

Worcester city centre

Worcestershire's environment

2.87 The county is rich in high-quality environmental assets. Worcestershire's natural and historic environment helps to define the county, providing a strong sense of place. The value of Worcestershire's environment in attracting and retaining people and businesses is also recognised by the Worcestershire Local Enterprise Partnership. As a largely rural county there are significant areas of green space. These do not exist in isolation, but are part of an integrated system of environmental stepping stones in a wider network of green infrastructure.



Broadway Tower, Worcestershire

Landscape

2.88 Worcestershire's landscape is one of the most diverse in Britain, with four National Character Areas[113] and 22 significantly different rural landscape types.[114] The area encompasses a variety of different landscapes, which can be broadly divided into two distinctive topographical types: a rolling landscape with areas of semi-upland character cut by often deeply incised stream valleys dominating the northern, north-western and extreme western parts of the county; and generally lower lying areas in the central, southern and eastern parts of the county, dominated by the distinctive Severn, Avon, and Teme river valleys. These landscapes closely reflect the underlying geology.

2.89 Half of Worcestershire's entire land area has undergone some kind of landscape character change since 1945, with a major loss of field boundaries during this time and whilst there was an increase in orchard planting from around the 1850s onwards, there were subsequently declines throughout the twentieth century.[115] Mineral development can also result in changes to landscape character. For example, sand and gravel has been extracted from sites along the Severn valley to the north of Worcester over many years, resulting in changes to field boundaries and introducing lakes and ponds into a previously agricultural landscape.

113 National Character Areas are areas that share similar landscape characteristics, and which follow natural lines in the landscape rather than administrative boundaries. The 4 National Character Areas covering Worcestershire are the Mid Severn Sandstone Plateau, Teme Valley, Severn & Avon Vales, and Malvern Hills. http://publications.naturalengland.org.uk/category/587130

114 Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance.*

115 Worcestershire County Council (2012) *Worcestershire Historic Landscape Characterisation.*

View from the Malvern Hills

2.90 Current climate change concerns indicate that the UK is likely to experience more extreme weather conditions and that the distribution patterns of flora at the limit of their natural extent may be noticeably reduced. The resulting impact on the landscape is likely to be one of loss as characteristic features, such as the beech hangers in Limestone Estatelands, become less prominent. Although this will result in a loss of species diversity, the impact on the overall landscape character is unlikely to be profound because it is dependent on a range of characteristics.[116]

2.91 The Malvern Hills and the Cotswolds Areas of Outstanding Natural Beauty designations cover 9% of the county and afford national protection to their landscapes. The designations extend over Worcestershire's boundary with Herefordshire, Gloucestershire and beyond. Changes to the landscape beyond the boundary of the Areas of Outstanding Natural Beauty can also impact on their setting.

Biodiversity

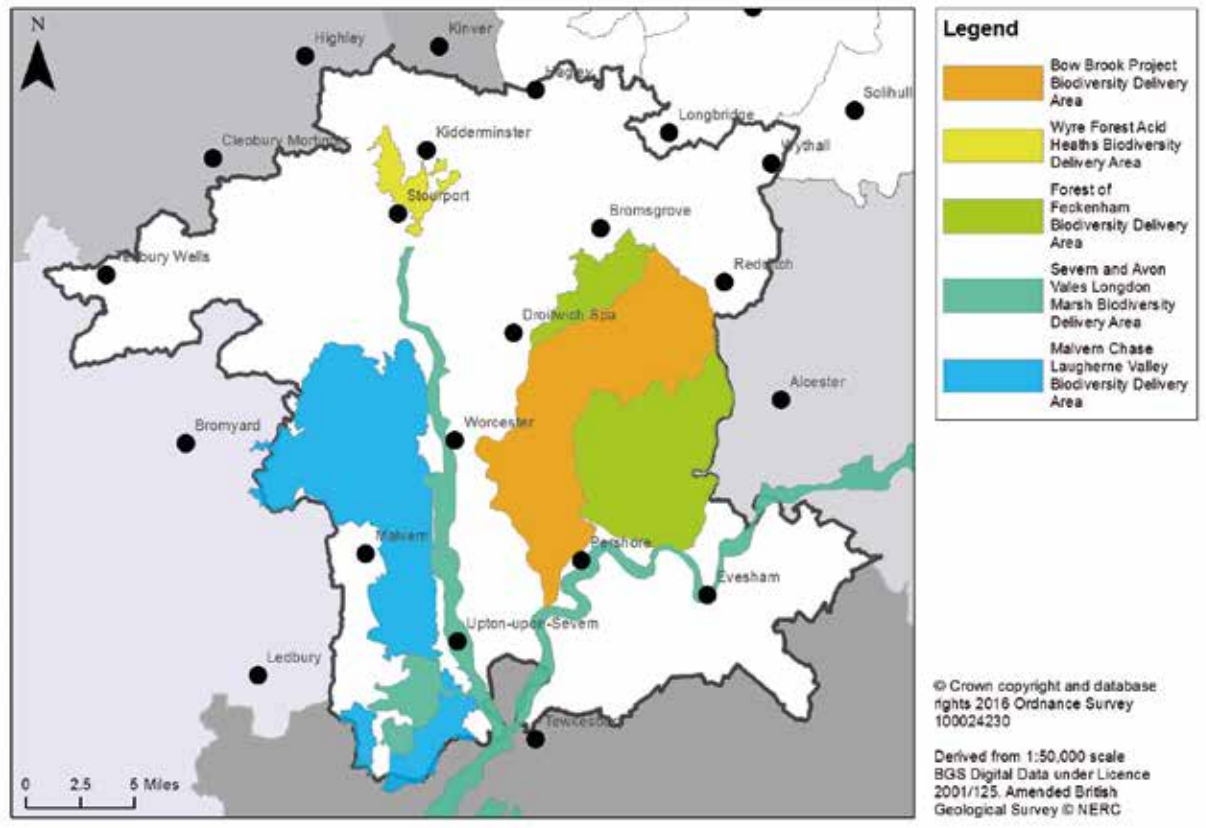
2.92 The county is exceptionally biologically rich as it encompasses the southern limit of many northern plant and animal species, and the northern limit of many southern species. There are two Special Areas of Conservation, four National Nature Reserves, 114 biological Sites of Special Scientific Interest (SSSI) and over 567 Local Wildlife Sites in the county, covering approximately 5% of the county.[117] Worcestershire's Biodiversity Action Plan[118] has 17 different habitats and 24 species action plans, of which 26 are national priorities. Worcestershire also has over 20% of the remaining UK resource[119] of unimproved neutral grassland habitat.

2.93 There are, however, localised areas where SSSIs are in poor condition and whilst some of the Biodiversity Action Plan habitats (BAP habitats) are well connected, others are fragmented. Recorded populations of breeding birds in Worcestershire are also falling; reflecting the pattern nationally and occurring largely as a result of changing agricultural practices.

Wet grassland, Lower Moor Worcestershire

116 Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance.*
117 8600ha.
118 Worcestershire Biodiversity Partnership (2008) *Biodiversity Action Plan for Worcestershire.*
119 Estimated to be just 7282ha by Rodwell et al in 2007 (in Worcestershire Biodiversity Partnership (2008) *Biodiversity Action Plan for Worcestershire*).

Figure 2.13 Worcestershire Biodiversity Delivery Areas



2.94 Worcestershire Biodiversity Partnership and Local Nature Partnership has identified five Biodiversity Delivery Areas (BDAs)[120] where targets within the Biodiversity Action Plan can be best delivered in the short term. These are:

- **Bow Brook:** The Bow Brook catchment was once dominated by wet pasture meadows and extensive areas of marshland supporting breeding snipe, redshank and marsh warbler. Habitat fragmentation began after the second world war as a result of drainage, the conversion of land to arable use and the ongoing intensive management of grassland. This has led to an overall decline in biodiversity value, but presents widespread opportunities for restoration. Diffuse and point source pollution from agricultural and urban sources is a significant issue for parts of the watercourse. The Bow Brook has been identified by the Environment Agency as failing to meet 'good ecological status' as required by the Water Framework Directive.
- **The Forest of Feckenham:** This lowland pastoral landscape supports a great proportion of the species-rich neutral meadow remaining in Worcestershire (and, indeed, in England) along with traditional orchard, parkland, veteran trees and scattered blocks of ancient semi-natural woodland. Contained within this landscape are remnants of formerly extensive Royal Forests and Chases. The Forest of Feckenham supports the West Midlands' only known population of brown hairstreak butterfly and is a very important area for arable flora. Fragmented landownership and small, isolated sites and declining expertise to manage these habitats have been barriers to habitat restoration in this area.

120 The Biodiversity Delivery Areas can be found on the Worcestershire Biodiversity Action Plan pages at http://www.worcestershire.gov.uk/info/20252/environmental_policy/1155/biodiversity_action_plan.

- **The Malvern Chase and the Laugherne Valley:** Together they contain a rich mosaic of acid grassland and species-rich neutral meadows, traditional orchard, wooded hills and valleys, parkland and scrub. Hedgerows and veteran oak pollards are a characteristic feature and around the commons black poplars are frequent as roadside and streamside trees. The River Teme and its floodplain bisect the northern half of the area. The landscape between Worcester and Malvern provides important opportunities for linking habitat restoration and creation to the socio-economic agenda.
- **The Severn and Avon Vales:** This area encompasses the two river systems with their associated floodplains. Wetland features found along their lengths include wet pasture meadows, reedbed, wet woodland, ditches and old pollards. Much of the landscape is intensively farmed: water quality issues must be addressed along the length of the two rivers and currently fragmented riparian habitat restored or newly created. This area is important for the delivery of wetland targets within England.
- **Wyre Forest Acid Grasslands and Heaths:** The geology of north Worcestershire supports a lowland heathland and acid grassland resource that is contiguous with that found on the Birmingham Plateau and northwards into Staffordshire. Outside of several large nature reserves exist scattered, fragmented sites in private ownership. Many of these are under poor or inappropriate management and the botanical interest is significantly degraded; the habitat is especially vulnerable to nitrate input.

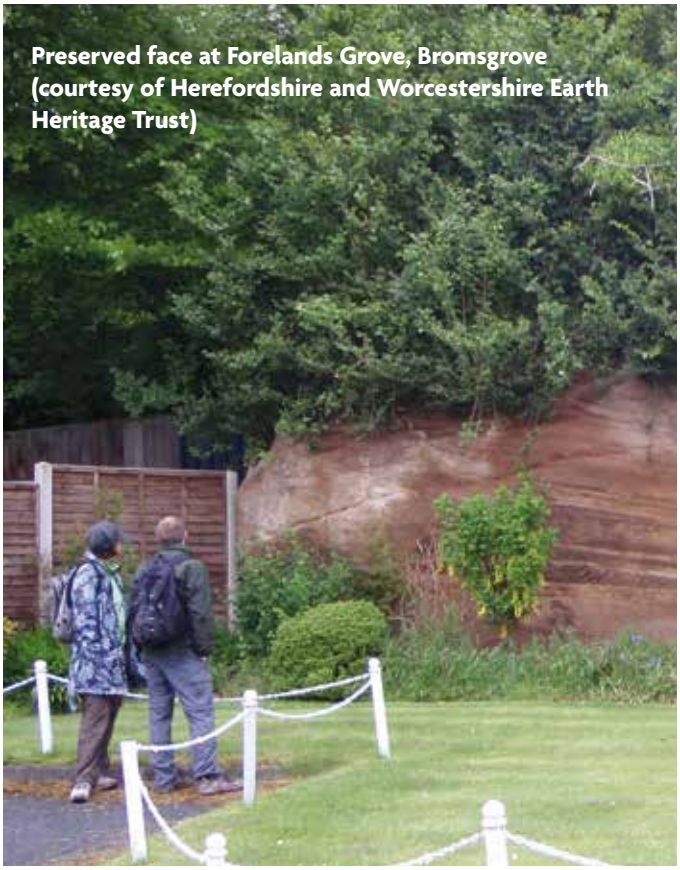
2.95 Mineral workings and their restoration can also create significant opportunities for new habitats, sites and features of nature conservation value. They provide opportunity to create habitats that are more resilient to climate change and to link existing sites and corridors to aid the dispersal of species by helping to buffer, extend or create links between existing habitats.[121] It is also estimated that mineral sites nationally have the potential to deliver all the existing UK BAP habitat creation targets for nine[122] priority habitats.[123]

2.96 There is also potential for the natural environment to reduce carbon emissions however there are relatively few examples of this across the country and currently no county-wide strategic vision of how the natural environment could be used to reduce carbon production.[124]

Geodiversity

2.97 There are 13 geological SSSIs and more than 90 Local Geological Sites in Worcestershire. The Abberley and Malvern Hills Geopark, which covers 1,250 square kilometres, is partly in Worcestershire and extends into Gloucestershire, Herefordshire and Shropshire. Part of the 109-mile Geopark Way walking trail also runs through the county. The Cotswold Hills Geopark crosses into the south-east corner of Worcestershire.

2.98 It is often difficult to predict where important geological features might occur, but mineral working offers opportunities for greater geological understanding, and for important features to be recorded or preserved.



Preserved face at Forelands Grove, Bromsgrove (courtesy of Herefordshire and Worcestershire Earth Heritage Trust)

121 *Making Space for Nature: A review of England's Wildlife Sites and Ecological Network* Chaired by Professor Sir John Lawton CBE FRS

122 Lowland acid grassland, Native Woodland, Wood pasture and parkland, Lowland calcareous grassland, lowland heathland, Purple moor grass and rush pasture, Wet reedbeds, Lowland meadows, Upland hay meadows.

123 RSPB (2006) *Nature After Minerals: How mineral site restoration can benefit people and wildlife.*

124 The Worcestershire Partnership (2012) *Worcestershire Climate Change Strategy 2012 – 2020: A Framework for securing a low carbon & climate resilient County.*

Historic environment

Hanbury Hall

2.99 The county has a diverse and rich historic environment. Over 60,000 heritage assets are currently recorded on the county's Historic Environment Record. These are records that represent all aspects of Worcestershire's archaeology and historic environment, including archaeological sites, historic buildings, monuments and landscape features, of all dates from prehistoric to the twentieth century. There are also many nationally designated assets that include 135 Conservation Areas, 6,300 Listed Buildings and 168 Scheduled Monuments in the county.

2.100 The county's river valleys have provided a focus for settlement for over 6,000 years, not least due to the availability of natural resources and the fertile, free-draining soils of the river terraces. Prehistoric and Romano-British settlement and ceremonial remains are widely distributed and often extensive throughout the Severn, Avon and Teme valleys. All river and major stream valleys are also associated with important palaeo-environmental deposits. The rural settlements of Worcestershire are predominantly medieval or earlier in origin.

2.101 Worcestershire's urban areas developed during the medieval period as market centres and sites of early industry, notably in the north of the county. Bromsgrove was a centre for the medieval wool trade, Kidderminster developed a textile industry and Bewdley was a centre for forest industry and distribution. Droitwich, already a major hub of salt production during the Iron Age, expanded production during the medieval and later centuries. Worcester developed from a Roman town and industrial area to become an important marketplace and Ecclesiastical centre along with Pershore and Evesham. Towns situated alongside the waterways, including the county's canals, continued to develop their industries and markets connected by these key navigational routes to the Bristol Channel and the expanding Birmingham and Black Country conurbation.[125] Stourport developed as a major inland port during the later 18th century and Kidderminster's first recognised carpet weaving factory was built in 1735 by John Pearsall and John Broom.[126] Redditch began needle-making as a large-scale cottage industry during the 17th and 18th centuries and Worcester prospered as a centre of porcelain manufacture.

2.102 Worcestershire remains a largely rural county despite the success of its industrial and market towns and this is reflected in its diverse rural historic environment. Dispersed, wayside settlements dominate the sinuous sunken lanes that connect areas of mixed-farming, small hedgerow-bound fields and enclosed woodlands. There are 3,703 historic farmsteads and 977 outfarms in Worcestershire. These are mostly dispersed or clustered around road junctions with the exception of the south-east of Worcestershire where farms are integral to the mostly nucleated villages that distinguish this area from other rural parts of the county. There are prehistoric hill forts on many of the county's hills and high ground, with notable examples on Malvern and Bredon Hills. Wyre Forest, the largest contiguous area of ancient woodland in England, has a substantial assemblage of prehistoric,[127] medieval and industrial assets. The Feckenham Conservation Area incorporates areas of what was once part of the ancient Feckenham Forest. In addition

125 Wyre Forest District Council (2012) *The Historic Environment Technical Paper.*
126 Wyre Forest District Council (2012) *The Historic Environment Technical Paper.*
127 Wyre Forest Landscape partnership, *"Wyre Forest Management Strategy - Consultation draft"* http://www.wflp.org.uk/assets/uploads/downloads/a6ed9-WYRE_DRAFT_STRATEGY_v11.pdf.

there are several designed landscapes including parks, both private (e.g. Croome Park) and public (e.g. Priory Park in Malvern, or Lido Park in Droitwich Spa). As well as landscape interest, these heritage assets have significant architectural and archaeological interest and often contain other monuments and memorials.

2.103 The historic environment is particularly sensitive to impact and change from development, land management, climate change and mineral workings. The effects of climate change are becoming more apparent through soil erosion and flood damage to historic buildings. Mineral workings often affect large areas and provide significant opportunities for archaeological investigation, although opportunities to preserve discoveries in situ are very limited. **Figure 2.15** shows the major discoveries at mineral workings in Worcestershire.

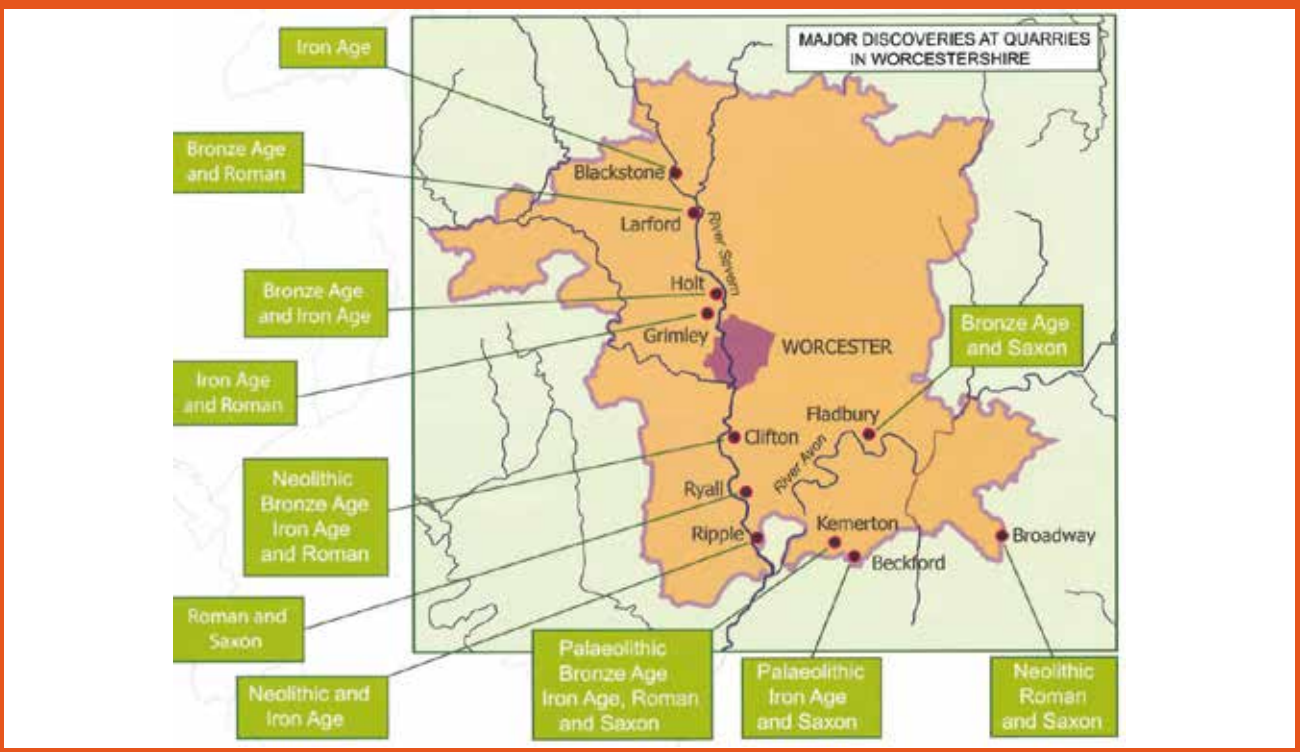
Water environment

2.104 The term water environment encompasses a range of issues relating to the surface and ground water environment including flooding, water quality and water supply.

2.105 The county includes the catchment of three main rivers, numerous small streams and minor rivers, a network of canals, plus both urban and rural areas, with the result that flooding is varied in nature and extent throughout Worcestershire and can come from a range of sources, including: surface water flooding following high-intensity or prolonged rainfall; ordinary watercourse flooding when the network of small watercourses, streams, brooks and small rivers cannot accommodate the volume of water flowing into it or an obstruction impedes flow; main river flooding when main rivers are overwhelmed and flow outside their banks; groundwater flooding when local water levels rise above the surface of the ground, particularly after periods of sustained rainfall; and sewer flooding which occurs when the sewer network cannot cope with the volume of water entering it, particularly at times of heavy rainfall. Media coverage would suggest that the major flood risk in Worcestershire is posed by watercourses flowing through urban areas; however, the majority of flood events in recent years have actually been caused by intense rainfall leading to surface water run-off and ordinary watercourse flooding.[127]

127 Worcestershire County Council, *Worcestershire Local Flood Risk Management Strategy 2015-2021*

Figure 2.14 Major discoveries at mineral workings in Worcestershire



2.106 In addition, Worcestershire suffers from significant water quality issues. The majority of waterbodies in Worcestershire are polluted by a number of point and diffuse sources, including pollution caused by overland flow of phosphates and nitrates from agricultural land. The EU Water Framework Directive (WFD) sets a requirement that all surface and ground waters must reach "good" or "good potential" status by 2015[128] and all water bodies must reach "good" or "high" status by 2027.[129] Currently, most of Worcestershire's watercourses are at a medium or high risk of not meeting the minimum requirements set out in the WFD.[130] Large areas of Bromsgrove and Wyre Forest districts, small parts of Malvern Hills and Wychavon districts and a very small part of Redditch borough also have poor groundwater quality.[131] Nitrate Protection Zones cover large areas of the county and many Source Protection Zones have been designated in Worcestershire particularly covering large parts of the north of the county.

2.107 A significant shortfall of water supply is also predicted for the period between 2014 and 2035 as aquifers are under pressure in many areas of the county, including Kidderminster and Bromsgrove district. This is due to greater demand for water as a result of increased development and population growth, increases in agricultural land use, and/or intensification of activities.[132]

2.108 Climate changes can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability. Wetter winters and more of this rain falling in wet spells may increase river flooding along the Severn and its tributaries. More intense rainfall causes more surface runoff, increasing localised flooding and erosion. In turn, this may increase pressure on drains and sewers and could be detrimental to water quality. Rainfall intensity in summer could increase even in drier summers.[133]

2.109 Mineral extraction is an activity which can physically remove aquifers and the usable groundwater resources contained within them. This may lead to impacts on the water environment as groundwater flows can alter, especially if watercourses derive baseflows from this same source of groundwater or wetlands rely on this water for their existence. However, mineral site restoration and quarry voids provide opportunities to reinstate natural flooding processes, and provide space for flood attenuation or water storage.

128 In some cases this can be delayed to 2021 or 2027, such as on the grounds of disproportionate cost or technical feasibility.
129 Council Regulation 2000/60/EC
130 Worcestershire County Council (2013) *Planning for Infrastructure in Worcestershire, Worcestershire Infrastructure Strategy, Consultation Draft*.
131 Source of WFD Watercourses and status http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=wfd_rivers#x=384022&y=240252&lg=1,7,8,9,5,6,&scale=7 Can be found on the EA website under Water Framework Directive - River Basin Management Plans - Rivers.
132 Worcestershire County Council (2011) *Planning for Water in Worcestershire: Technical Research Paper*.
133 Worcestershire County Council, *Worcestershire Local Flood Risk Management Strategy 2015-2021*

Irrigating crops

Health and well-being of Worcestershire's communities

2.110 The population of Worcestershire is generally healthy and is either as healthy as or healthier than the national average. Although recorded diabetes is significantly higher in Worcestershire than the England average and mental ill-health is also evident in the county, GP diagnosed depression rates are significantly higher than England in all parts of Worcestershire, particularly Wyre Forest (13.3% versus 7.4%).[134] Both locally and nationally there is also a high health burden from conditions which are linked to behaviours such as smoking, being physically sedentary, drinking too much alcohol, and eating too many foods that are high in fat, salt and sugar.

2.111 Life expectancy varies significantly across the county with spatial variation also evident in the prevalence of the main disease groups.[135] There are pockets of health-related deprivation, mental ill health and respiratory diseases. These are predominantly in the urban areas, but there are also some pockets of poorer health in the more rural parts of the county.[136] The proportion of the population in older age groups is also increasing rapidly, meaning that new challenges for health and social care are developing.[137]

Air quality

2.112 It is estimated that air pollution can reduce life expectancy in the UK by an average of six months, with resulting health costs estimated to be up to £20 billion a year.[138] The most important air pollutant in terms of long term health effects is Particulate Matter (PM). These are particles emitted from vehicle exhausts and chimneys, or formed in the air from reactions between other pollutants. Elevations in air pollution can cause lung irritation and exacerbate lung and heart conditions.[139] Nitrogen dioxide (NO_2) and ground level ozone (O_3) from these sources can also have similar health impacts.

2.113 In Worcestershire there are 10 Air Quality Management Areas (AQMAs), all of which have been declared because of an exceedence of the annual average air quality objective for Nitrogen Dioxide.[140] These are situated within Worcester City and the districts of Bromsgrove, Wychavon and Wyre Forest. *The Air Quality Action Plan for Worcestershire* proposes actions to address traffic management, lower emissions, and support a pattern of development which facilitates the use of sustainable modes of transport, alongside education initiatives and policy guidance.[141]

2.114 Mineral development can impact on air quality very locally through dust emissions, but more widely through transporting materials from source to their end use.

134 Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper.*
135 Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper.*
136 Worcestershire County Council (September 2014) *Green Infrastructure Framework 4: Socio-economic Benefits of Green Infrastructure.*
137 Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper.*
138 Worcestershire Regulatory Services, September 2013, *"Air Quality Action Plan for Worcestershire"* http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-action-plan.aspx.
139 Worcestershire Regulatory Services, September 2013, *"Air Quality Action Plan for Worcestershire"* http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-action-plan.aspx.
140 Worcestershire Regulatory Services, September 2013, *"Air Quality Action Plan for Worcestershire"* http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-action-plan.aspx.
141 Worcestershire Regulatory Services, September 2013, *"Air Quality Action Plan for Worcestershire"* http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-action-plan.aspx.

Access and recreation

Blackstone Riverside Park, near Bewdley Worcestershire

2.115 Access to quality green space can contribute positively to physical and mental health, providing opportunities for outdoor physical activity and places to relax. Evidence suggests access to green space can also improve community cohesion, reduce levels of antisocial behaviour, improve social interaction, help to build self-esteem, and contribute to social mobility.[142]

2.116 It is reported that increasing access to parks and open spaces could reduce NHS costs of treating obesity by more than £2 billion per year nationally and also reduce mental health admissions, resulting in further savings.[143] Research by the Woodland Trust shows that less than 17% of the population of England has access to local woodland within 500m of their home. In Worcestershire this figure is lower at 15%. Providing more accessible trees, woods and green space can provide a critical link to healthier lives in Worcestershire.[144]

2.117 In Worcestershire there are over 11,750 ha of free-to-access natural green spaces. These consist of country parks, short way-marked trails, circular walks and other public rights of way. There are also five long-distance recreation routes in the county (the Severn Way, the Wychavon Way, the North Worcestershire Path, the Cotswold Way, the Worcestershire Way), as well as the Geopark Way.

2.118 Local-scale provision is generally good in the county and there is a range of county-scale sites[145] in the Wyre Forest, Lickey, Clent and Malvern Hills. Despite this, the proportion of households with good access to county-scale and sub-regional-scale[146] informal recreation-sites falls short of Natural England's Access to Natural Green Space Target. This is a particular issue in the urban areas of Worcester and Bromsgrove but is also an issue in the rural district of Wychavon, where, despite large areas of green space, accessibility is poor.

2.119 With current and future levels of population growth in the county there is an increasing demand for informal recreation, but opportunities to expand existing sites are very limited. Over 40% of sub-regional recreational sites in or around Worcestershire are thought to be near, at or over visitor capacity.[147] Five areas of search have been identified for consideration to develop new, or extend existing informal recreation-sites in Worcestershire: Wyre Forest; Lickey Hills (including enhancement of the canal to Worcester); Clifton Water Park south of Kempsey; Worcester – Droitwich Park; and Hallow Riverside Park.[148]

2.120 There is potential for mineral workings to reduce access to green spaces in the short term, but there is also potential for the restoration of sites to leave a positive legacy of accessible green space and improved public rights of way.

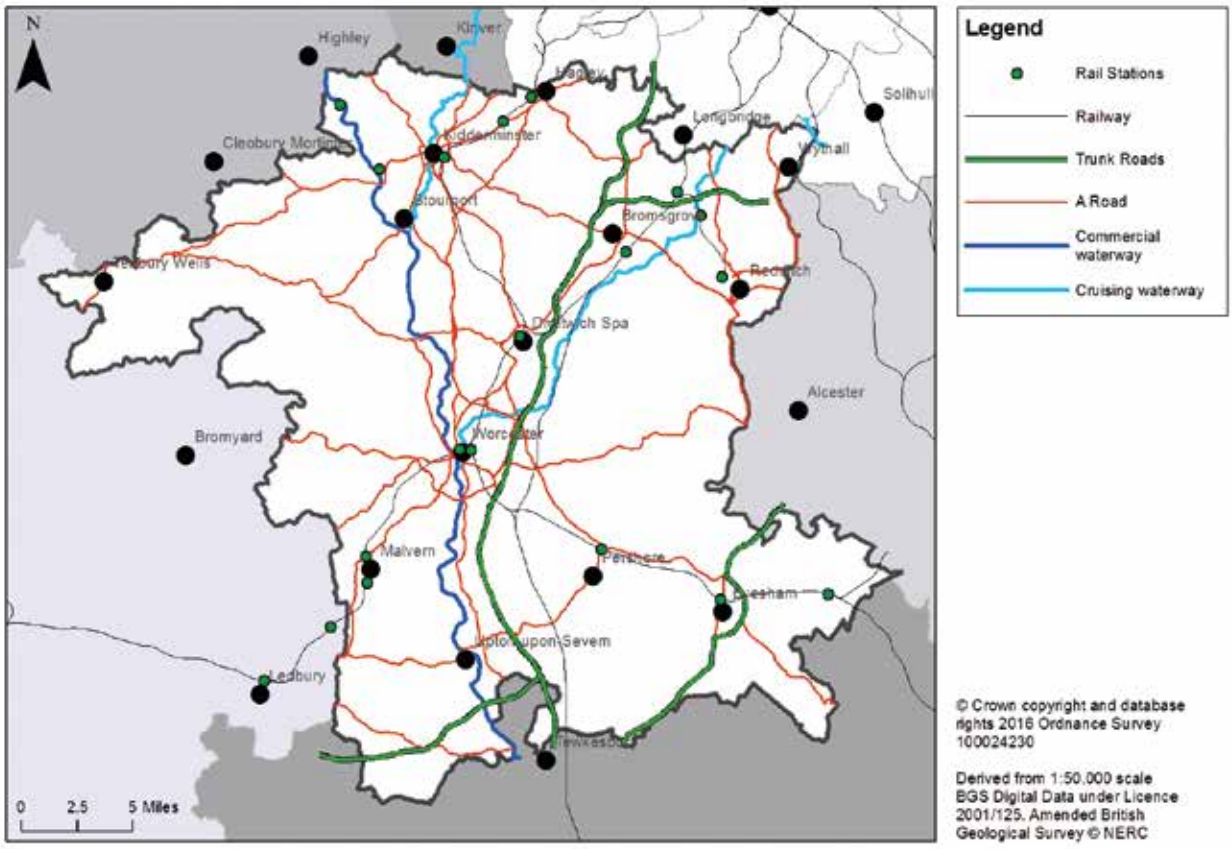
Transport

2.121 The county's strategic transport network, which includes water, rail and road links is shown on **figure 2.15**.

2.122 In Worcestershire there are significant sections of the transport network which are currently at or approaching capacity. Planned new developments will add pressure to the local and regional network across all modes of transport, and this pressure is expected to be greatest in and around the urban areas of Worcester, Bromsgrove and Kidderminster and along key inter-urban routes.[149]

142 Worcestershire Health and Wellbeing board: *the Joint Health and Wellbeing Strategy 2013-2016* http://www.wychavon.gov.uk/documents/10586/988671/CS+-+Wychavon+Health+and+Wellbeing+Plan+2014-16_Final+proof.pdf/d7843649-3474-47c8-99a2-60e9c3b43cb2
143 The Kings Fund reported in Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper*.
144 Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper*.
145 Sites that are 100ha or larger (As defined by the *Accessible Natural Greenspace Standard*, developed by Natural England).
146 Sites that are 500ha or larger (As defined by the *Accessible Natural Greenspace Standard*, developed by Natural England).
147 Worcestershire County Council (May 2013) *Green Infrastructure Framework 3: Access and Recreation.*
148 Worcestershire County Council (May 2013) *Green Infrastructure Framework 3: Access and Recreation.*
149 Worcestershire County Council (January 2013) *Planning for Infrastructure in Worcestershire (consultation draft)*

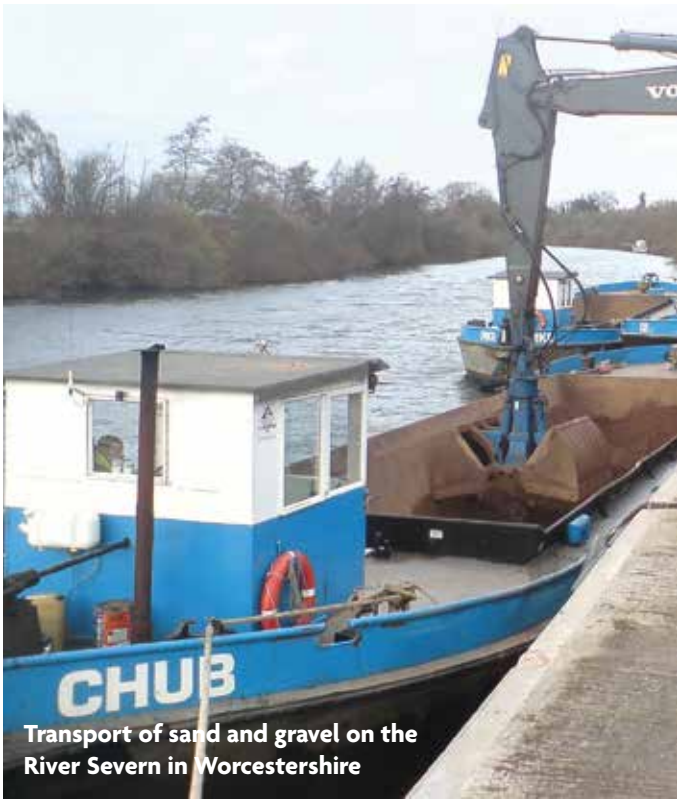
Figure 2.15 Strategic Transport Network



Bulk transport by rail, sea or inland waterway

2.123 There are no handling and processing facilities for the bulk transport of minerals by rail, sea or inland waterway in Worcestershire and no planned or potential sites have been identified.

2.124 The scale of Worcestershire's resources and location within the strategic transport network mean it is unlikely these will be developed, although there may be opportunities for smaller scale water or rail transportation.



Transport of sand and gravel on the River Severn in Worcestershire

Water transport[150]

2.125 There is a network of navigable rivers and canals throughout Worcestershire. Environmental benefits can be gained by moving minerals by water, as this mode of transport can relieve road congestion and produces considerably lower carbon emissions. Notwithstanding these benefits, the use of inland waterways to transport minerals is limited by the proximity of mineral resources to those rivers and canals and by the capacity of specific waterways to accommodate different sizes of vessel. The number of locks on a waterway may also impact on viability of water transport due to increased time and manpower required to navigate through them. Wharfage facilities are also required for the delivery of minerals to their destination or for onward transport.

2.126 The River Severn is classed as a 'commercial waterway' from Stourport to Gloucester. This section of the River Severn is under-utilised for freight but is popular with leisure and tourist boaters. Sand and gravel is carried commercially on the River Severn between the extraction-site at Ripple Quarry and the processing plant at Ryall House Farm Quarry in Worcestershire[151] and has in the past been transported onwards into Gloucestershire. Planning permission has also been granted for the continued use of the wharf and processing plant at Ryall House Farm Quarry to receive material transported on the River Severn from Ryall Court Farm Quarry near Upton-upon-Severn.[152] The Severn connects to the Staffordshire and Worcestershire Canal at Stourport, the Droitwich Barge Canal at Hawford, the Worcestershire and Birmingham Canal at Worcester and to the River Avon at Tewkesbury.

2.127 The River Avon joins the River Severn at Tewkesbury and connects to the Stratford-upon-Avon Canal at Stratford-upon-Avon. It is well used by recreational and tourist craft but the last commercial barge to operate regularly on the river ceased in 1972.[153] In 2010 clay was transported from Birlingham to Pershore to build Environment Agency flood defences, showing the potential for minerals to be carried on the River Avon. There are 17 locks on the Avon between Tewkesbury and Stratford-upon-Avon. The size of the lock gates at Tewkesbury means that smaller vessels are required than those used on the River Severn. It may be possible to lock the smaller barges together once on the River Severn and then tow or push them together, or to explore the potential for improvements to the locks to improve the commercial viability of carrying minerals on the river.

2.128 There are four canals in Worcestershire. The Worcester & Birmingham Canal runs from the River Severn in Worcester to Birmingham, and the Staffordshire & Worcestershire Canal flows through Stourport and Kidderminster to link the River Severn at Stourport with towns to the north including Staffordshire and Birmingham. The last regular commercial traffic on the Staffordshire & Worcestershire Canal carried coal from Cannock to Stourport power station, but this traffic ceased in 1949. The Droitwich Barge Canal and Droitwich Junction Canal were built to carry salt but were abandoned in 1939. They were restored and reopened in 2010 and 2011 respectively and are now used for leisure craft.

2.129 The lack of commercial traffic on Worcestershire's waterways means that there are currently[154] no commercial wharfage facilities used for handling minerals in the county, other than those specifically constructed for the transportation of minerals between Ripple and Ryall quarries on the River Severn.

150 Worcestershire County Council "Worcestershire Minerals Local Plan Background Document: Water Transport (Consultation Document)"
151 See case study in Worcestershire County Council (2016) *Minerals Local Plan Background Document: Water Transport*, available at www.worcestershire.gov.uk/mineralsbackground.
152 Planning application reference 15/000012/CM.
153 Email from Clive Matthews, General Manager, Avon Navigation Trust, 06/01/2014
154 As at September 2016.

Rail transport[155]

2.130 Rail freight has traditionally been associated with heavy, bulky goods and construction materials, including aggregates and minerals. A freight train fully loaded with construction materials (including aggregates) can replace 77 Heavy Goods Vehicles (HGVs). Rail freight can also play an important role in mitigating climate change as it reduces fuel needs and produces 76% less CO_2 than road freight. It also produces fewer harmful emissions and fine particulates than road transport.[156]

2.131 Strategic rail networks within Worcestershire have strong links to the north and south of the country, and Worcestershire is well-served by passenger rail with all of the main towns being connected to the rail network. However, of the 94 miles of railway in the county, 29.5 miles are single track, which imposes capacity constraints, complicates timetabling and adversely impacts reliability. Although Network Rail is investing around £100 million in works to improve services though Worcestershire, including double tracking the line at Alvechurch, significant sections of single line will remain.[157] The nearest major rail freight facilities are currently[158] located to the north of Hereford and in Coventry, Daventry and Swindon.

2.132 There are no minerals sites with rail connections in Worcestershire and limited opportunities for rail freight transport at present. The development of new railheads is likely to be challenging and would require the development of a sizeable mineral working to warrant the investment in new rail infrastructure.

Road transport[159]

2.133 The county is well connected to the strategic road network. It is served by three motorways (M5, M42 and M50) and one designated Trunk Road (A46). Sections of the M5 and M42 experience very high traffic flows. Flows on the M50 are significantly lower than for the other motorways in Worcestershire. Worcestershire is also served by a number of A-roads that connect the main centres in the county and provide access to the motorway network, towns and cities in surrounding counties, and residential and industrial areas.

2.134 The *Worcestershire Advisory Lorry Route Map* indicates the best available routes for heavy goods vehicles in Worcestershire, encouraging use of routes which avoid environmentally sensitive areas, bridges where the safe clearance is restricted and minimise conflict with local residents and impacts on Air Quality Management Areas (AQMAs). Increasing numbers of HGVs are recognised as a particular problem in the Vale of Evesham. Significant numbers of vehicle movements can negatively impact on local air quality, particularly where the road network is associated with or within close proximity of Air Quality Management Areas (AQMAs).

Air transport

2.135 Many minerals are expensive to transport. This is especially the case for aggregates, as they are a relatively low-value and bulky material and, as such, they are likely to be used close to their source. Air transport is therefore unlikely to be required for the types of minerals which exist in Worcestershire.

2.136 Restored minerals sites can impact on aviation safety by increasing the risk of bird strike. Birmingham airport is with 13km of Worcestershire. It could be impacted by mineral development in the north of the county. This is an important issues which would need to be considered in the restoration of sites in this area.[160]

155 Worcestershire County Council, (2016), "*Worcestershire Minerals Local Plan Background Document: Rail Freight (Consultation Document)*", available from: www.worcestershire.gov.uk/minerals.

156 One gallon of fuel can move a tonne of material 246 miles on the railway, but only 88 miles by road. Worcestershire County Council, "*Worcestershire Local Transport Plan 3: Essential References Document*", http://www.worcestershire.gov.uk/info/20055/strategies_plans_and_bids/806/the_local_transport_plan.

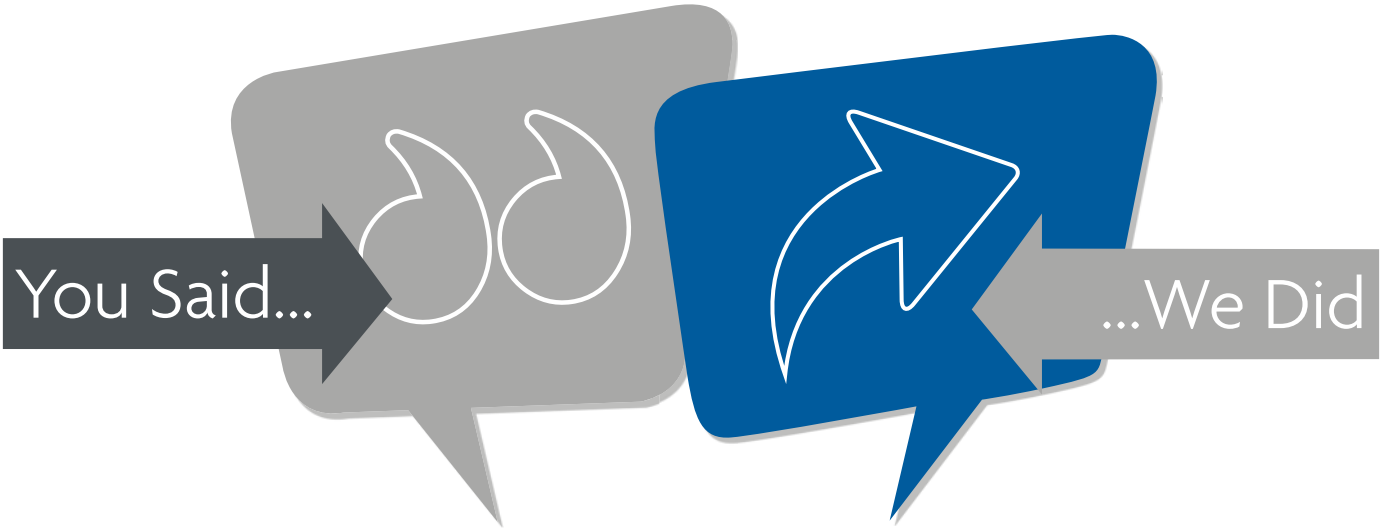
157 Network Rail, "*Delivering a better railway for the North West and West Midlands: our plans for 2014-2019*", http://www.networkrail.co.uk%2Fpublications%2Fdelivering-a-better-railway-for-the-north-west-and-west-midlands.pdf&usg=AFQjCNGVPK6qGC2PaMXA_wmeLd-kWHm7Fg.

158 As at May 2015

159 Worcestershire County Council, "*Worcestershire Local Transport Plan 3: Essential References Document*", http://www.worcestershire.gov.uk/info/20055/strategies_plans_and_bids/806/the_local_transport_plan.

160 ODPM Circular 01/2003: *Safeguarding Aerodromes, Technical Sites and Military Explosives Areas Storage Areas: The Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) Direction 20024. (Still extant 23/04/2015)* identifies 15km as a significant distance.

Developing the Third Stage Consultation



Respondents to the *Second Stage Consultation on the Minerals Local Plan*[1] broadly agreed with the **Portrait of Worcestershire** set out in that document, however respondents indicated that both the **Portrait of Worcestershire** chapter and the wider document needed a sharper focus on the things that make Worcestershire unique.

The *Initial Sustainability Appraisal*[2] commented that the section would benefit from drawing out some of the particular strengths and weaknesses of Worcestershire's economy, society and environment, including reference to the cultural and economic importance of horticulture; demographic pressures (including ageing populations in parts of the county); low number of water courses satisfying Water Framework Directive targets; affordable housing pressures; Neighbourhood Plans and other community initiatives being taken forward; and the successes of partnership working.

The consultation responses, the *Initial Sustainability Appraisal*[3], newly published or updated evidence and best practice and changes in local and national policy have been taken into account in developing **Portrait of Worcestershire** in the *Third Stage Consultation*. The chapter retains broadly the same structure as the *Second Stage Consultation on the Minerals Local Plan*[4] but is much more detailed, particularly with regard to the specific mineral resources in Worcestershire. Explicit reference has also been made to health and well-being.

While the portrait includes a summary of the main issues it is not possible to detail everything that has been taken into account in developing *Minerals Local Plan Third Stage Consultation*. Further information is set out in the background documents which can be found at www.worcestershire.gov.uk/mineralsbackground.

1 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
2 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
3 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
4 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".

Third Stage Consultation on the Minerals Local Plan: Consultation Questions

Q 2.1 - Does the Portrait of Worcestershire identify the locally relevant key issues for the Minerals Local Plan?

Q2.2 Are there any wording changes which you would suggest to Chapter 2 to improve clarity or any other issues which you think should be considered

Restored sand and gravel working, Retreat Farm, Grimley

3. Vision and objectives

Introduction

3.1 The Minerals Local Plan includes a **vision** for mineral development in the county setting out what the Plan is aiming to achieve by 2035. It also includes **objectives** which outline the high-level priorities for realising the **vision**. They have guided the development of the policy framework and are based on the key issues for the Minerals Local Plan which are summarised in this chapter.

Restored sand and gravel working, Blackstone Quarry, near Stourport-on-Severn

Figure 3.1. The relationship between the vision, objectives and the policy framework

Key issues for the Worcestershire Minerals Local Plan

3.2 In identifying the issues that need to be addressed in the Minerals Local Plan, the Mineral Planning Authority has had regard to the issues outlined in **Chapter 2: Portrait of Worcestershire**, national and local policy, the Duty to Cooperate, the Plan's evidence base and background documents,[1] the findings of the Sustainability Appraisal process, Habitats Regulations Assessment process and Equalities Impact Assessment, and the outcomes of stakeholder engagement and public consultation.

3.3 It is important that the Minerals Local Plan takes account of the distinctive characteristics, needs and opportunities of Worcestershire and the aspirations of other relevant plans and strategies. In line with 'the presumption in favour of sustainable development' of the National Planning Policy Framework,[2] the Minerals Local Plan must positively identify where and how mineral development should occur. This means that any policies and proposals will be relevant to the local context and will not only avoid harm but will contribute to wider sustainable development goals.

3.4 The purpose of the Worcestershire Minerals Local Plan is to address:

a) the sustainable supply of aggregates, to meet identified needs to 2035 and beyond, considering:

- the contribution of substitute, secondary and recycled materials and mineral waste to overall supply;[3]
- the current shortfall in the landbank of permitted reserves of sand and gravel; and
- constraints on delivering crushed rock supply over the life of the plan;[4]

b) the steady and adequate supply of locally and nationally important industrial minerals, such as brick clay and silica sand;

1 www.worcestershire.gov.uk/mineralsbackground.
2 Department for Communities and Local Government (March 2012) *National Planning Policy Framework*, paragraph 14.
3 In conjunction with the Worcestershire County Council (2012) *Worcestershire Waste Core Strategy Local Plan 2012-2027*, www.worcestershire.gov.uk/wcs.
4 Worcestershire County Council (2016) *Minerals Local Plan Background Document - Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*, available at www.worcestershire.gov.uk/mineralsbackground.

c) the adequate and diverse supply of building stone to maintain Worcestershire's built heritage and landscapes;

d) the need to safeguard locally and nationally important mineral resources, permitted mineral sites and supporting infrastructure from needless sterilisation by other development.

3.5 Due to the quantities of resource required (see **Chapter 6**) and the tendency for mineral workings in Worcestershire to be small scale in comparison to other parts of the country, multiple sites are likely to be required over the life of the plan to address these issues. The policy framework will need to manage how minerals development takes place to ensure adverse impacts on people, businesses and the environment are minimised.

3.6 In Worcestershire, there is a strong relationship between the location of mineral resources and the character of landscapes where they are found. Land formations, topography, hydrology, and soil types are all closely linked to the type of bedrock, geological formations and mineral deposits. In turn these factors influence the fertility of the land, the habitats that thrive, issues such as surface water, ground water and the flow of watercourses and the way in which land is used now and has been used in the past. Collectively these components contribute to the character of an area. It is therefore not surprising that where clusters of mineral resources have been identified in Worcestershire there is a strong coherence within them, but that different clusters have a different character.

3.7 The scale and distribution of mineral resources inevitably influences where they can be worked, but this relationship gives scope for minerals development to help to address some of Worcestershire's important economic, environmental and social issues:

- **Landscape:** Worcestershire has an unusually diverse range of landscape character types across the county. Landscape is a visual manifestation of the interrelationship between man's activities and the natural environment. These are dynamic forces, forever changing the character of the landscape.[5] Piecemeal change to these landscapes could weaken local distinctiveness and undermine the character of the landscape. Considering the working and restoration of mineral sites at a landscape-scale can bring opportunities to strengthen key characteristics of existing landscape character types, such as hedgerow and field patterns or typical land-uses. Where change as a result of mineral working is inevitable, managing it within the wider context can ensure that the new landscapes that result are cohesive rather than fragmented.
- **Biodiversity:** Worcestershire has a wide variety of Biodiversity Action Plan habitats,[6] however many of these suffer high levels of fragmentation; this impacts on species' resilience and ability to adapt to climate change. Whilst mineral development may destroy or degrade some habitats, it offers significant opportunities to create others. The balance of benefit will depend on the quality of the existing habitat and that of any habitat which could be created. By viewing and designing mineral sites as part of a landscape-scale corridor, opportunities to buffer or extend high quality habitats or provide stepping stones between them can be optimised.
- **Agriculture and soils:** There is significant overlap between the mineral resources in Worcestershire and the areas of best and most versatile agricultural land. Agriculture is an important economic sector in Worcestershire, and landscape character is influenced by local agricultural practices. By considering this from the outset there is opportunity to conserve valuable soils, retain local distinctiveness and deliver agricultural restoration schemes that integrate wider benefits.

5 Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance* www.worcestershire.gov.uk/lca.
6 Habitats identified as important in the National Biodiversity Action Plan and local strategies.

- **Water environment:** Water quality, quantity and flooding issues in the county are all likely to be worsened by climate change. Mineral development could impact on water quality, quantity and flow but strong controls exist in planning and other regimes to manage these impacts. By viewing individual sites within their wider catchment and as part of a landscape-scale corridor, opportunities for flood betterment and water quality and quantity improvements can be optimised. These benefits could be realised throughout the life of the site.
- **Geodiversity:** Mineral working could destroy geological or geomorphological features, but also offers opportunities to enhance understanding by revealing, recording or retaining them. Individual features of geodiversity interest are often important in their own right, but viewing them in a wider context can contribute to the understanding and legibility of the geology of the landscape.
- **Historic environment:** Worcestershire has a diverse and rich historic environment which is sensitive to impact and change from land management, climate change and development, including mineral workings. Viewing heritage assets and their settings in the context of the wider historic landscape offers the greatest opportunity to enhance the setting of heritage assets, mitigate climate change impacts and improve public understanding and access. Mineral development provides significant opportunities for archaeological investigation as it often involves relatively large areas and, although opportunities to preserve discoveries in situ are very limited, this offers opportunities to enhance understanding of heritage assets and their settings.
- **Access and recreation:** Access to quality green space can contribute positively to physical and mental wellbeing, but there are inequalities in the distribution and capacity of publicly accessible green spaces and the public access networks across the county. Minerals development may temporarily prevent or alter access to green spaces, public rights of way or other access routes, but by planning and designing individual sites as part of a landscape-scale corridor, opportunities to connect, extend or enhance recreation assets can be optimised.

3.8 Each of these elements contributes towards the "green infrastructure" of the county. Green infrastructure is a term that is used to describe the network of green spaces and natural spaces in and beyond Worcestershire. High quality green infrastructure networks are multi-functional and offer wide ranging benefits that are appropriate to the local context both at a site-scale and landscape-scale. There are many advantages to be gained from securing a critical mass of high-quality green infrastructure in a locality as the positive combined impact of multiple sites exceeds the positive impact of each site on its own. Green infrastructure priorities are an important component of dealing with climate change[7] and are a means for delivering long-term sustainable development with social, economic and environmental benefits. These combined elements of green infrastructure have been reviewed alongside the known key and significant minerals resources in the county to develop strategic corridors as a focus for mineral working in the county (see **Chapter 5**)

7 Department for Communities and Local Government (March 2012) *National Planning Policy Framework*, paragraph 99.

Lower Moor water meadows, near Evesham

Pastoral landscape

A vision for the winning, working and lasting legacy of minerals development in Worcestershire to 2035 and beyond

The winning, working and lasting legacy of minerals development in Worcestershire will be part of a holistic approach to delivering sustainable economic growth, supporting quality of life, and enhancing the natural, built and historic environment, that together contribute to the diverse character of the county and surrounding area.

Worcestershire's permitted mineral sites and supporting infrastructure will provide a steady, adequate and sustainable supply of locally and nationally important minerals. This will contribute to identified local and national needs, making the best use of substitute, secondary and recycled minerals and mineral wastes to minimise the need for primary materials.

A seven year landbank of permitted sand and gravel reserves will have been reached by 2025 at the latest. At least this level will have been maintained thereafter.

Minerals development will have been delivered through multiple sites over the life of the plan, focused in five **strategic corridors**. Mineral sites will form an integrated part of Worcestershire's multifunctional green infrastructure network. The design, working and restoration of mineral sites will reflect the locally distinctive character of the **strategic corridors**, the site specific context and effective community engagement.

Mineral sites will make prudent use of mineral resources, balancing the need to extract as much material as possible with the need to achieve final landforms and restoration that delivers multifunctional benefits and is appropriate in the landscape. Minerals operations, transport and processing will be water and energy efficient and will mitigate and adapt to the impacts of climate change.

Worcestershire's locally and nationally important mineral resources which have not already been worked will remain available for future use, having been safeguarded against sterilisation by non-minerals development.

Objectives of the Worcestershire Minerals Local Plan

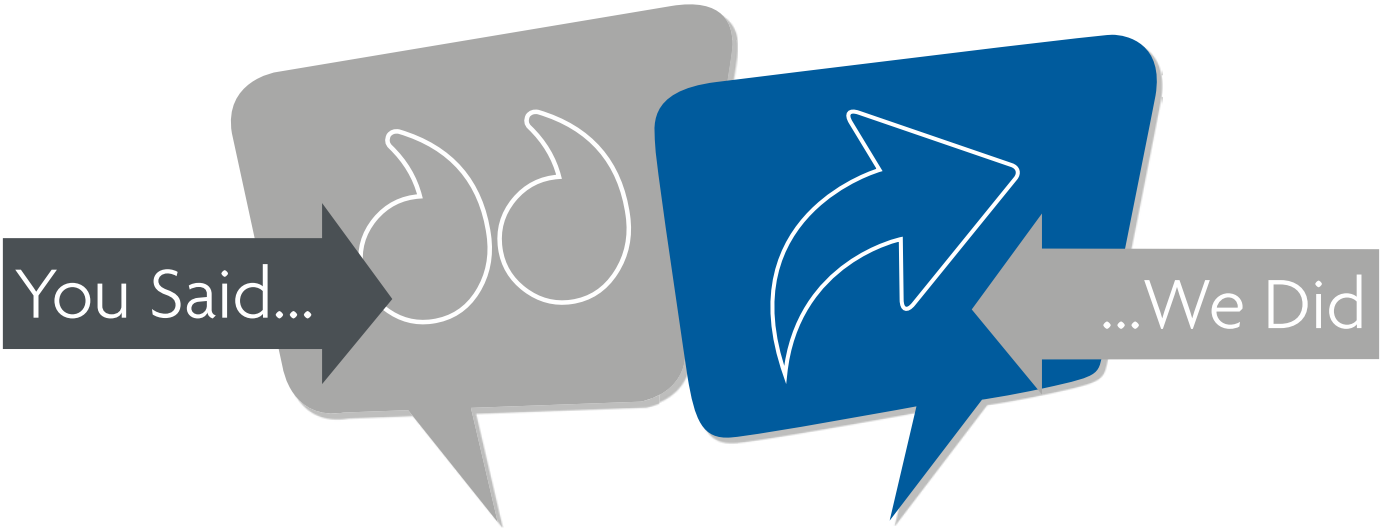
1. Deliver development in accordance with the priorities of the **spatial strategy**.
2. Maximise the contribution of substitute, secondary and recycled materials and minerals waste to overall mineral supply.
3. Maintain the steady and adequate supply of sand and gravel and address shortfalls in the landbank of permitted reserves.
4. Maintain the county's role in the steady and adequate supply of brick clay, bricks and brick products.
5. Foster an adequate and diverse supply of building stone.
6. Enable the sustainable supply of other locally and nationally important mineral resources found in the county, including crushed rock and silica sand.
7. Safeguard locally and nationally important minerals and supporting infrastructure from being needlessly sterilised.
8. Promote community inclusion in mineral development from inception to after-use so that local issues are understood and addressed.
9. Ensure that mineral development contributes to the mitigation of and adaptation to climate change and makes prudent use of natural resources.
10. Ensure that mineral development protects and enhances the health, well-being, safety and amenity of people and communities in and around Worcestershire.
11. Ensure that mineral development protects and enhances the natural and historic environment and distinctive local character.
12. Ensure that mineral development protects and enhances the vitality of the local economy.
13. Optimise opportunities to integrate economic, social and environmental benefits through the delivery of high-quality multifunctional green infrastructure throughout the life of the mineral development.

3.9 **Table 3.1** identifies the policies that will enable implementation of each of the **objectives**. The plan's monitoring framework in **Chapter 9** is also structured by the objectives in order to understand whether they are being achieved.

Processing at Ball Mill sand and gravel working

Table 3.1 Relationship between objectives and policy framework	**Chapter 5 - Spatial Strategy: Location of Mineral Development**						**Chapter 6 – Steady and Adequate Supply of Mineral Resources**								**Chapter 7 – Development Management**											**Chapter 8 – Safeguarding Minerals and Supporting Infrastructure**	
	MLP 1: Strategic Location of Development	MLP 2: Avon and Carrant Brook Strategic Corridor	MLP 3: Lower Severn Strategic Corridor	MLP 4: North East Worcestershire Strategic Corridor	MLP 5: North West Worcestershire Strategic Corridor	MLP 6: Salwarpe Tributaries Strategic Corridor	MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply	MLP 8: Steady and Adequate Supply of Sand and Gravel	MLP 9: Steady and Adequate Supply of Crushed Rock	MLP 10: Steady and Adequate Supply of Brick Clay and Clay Products	MLP 11: SSteady and Adequate Supply of Silica Sand	MLP 12: Adequate and Diverse Supply of Building Stone	MLP 13: Supply of Other Locally and Nationally Important Industrial Minerals	MLP 14: Supply of Energy Minerals	MLP 15: Sustainable Design Principles	MLP 16: Health and Quality of Life	MLP 17: Access and Recreation	MLP 18: Biodiversity	MLP 19: Landscape	MLP 20: Agriculture and Soils	MLP 21: Geodiversity	MLP 22: Water Environment	MLP 23: Historic Environment	MLP 24: Transport To and From Site	MLP 25: Transport Within Mineral Sites	MLP 26: Sustainable Development Delivery	MLP 27: Safeguarding Locally and Nationally Important Mineral Resources	MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure (also currently has double "sites" in)
1 Deliver development in accordance with priorities of the spatial strategy.	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓			✓		
2 Maximise the contribution of substitute, secondary and recycled materials and minerals waste to overall mineral supply.							✓																	✓	✓			✓
3 Maintain the steady and adequate supply of sand and gravel and address shortfalls in the landbank of permitted reserves.	✓	✓	✓	✓	✓	✓	✓	✓							✓									✓	✓		✓	✓
4 Maintain the county's role in the steady and adequate supply of brick clay, bricks and brick products.	✓	✓	✓	✓		✓	✓			✓					✓									✓	✓		✓	✓
5 Foster an adequate and diverse supply of building stone.	✓			✓	✓	✓	✓					✓			✓									✓	✓		✓	✓
6 Enable the sustainable supply of other locally and nationally important mineral resources found in the county, including crushed rock and silica sand.	✓			✓	✓		✓		✓		✓		✓	✓	✓									✓	✓		✓	✓
7 Safeguard locally and nationally important minerals and essential operational infrastructure from being needlessly sterilised.	✓																										✓	✓
8 Promote community inclusion in mineral development from inception to after-use so that local issues are understood and addressed.															✓	✓					✓							
9 Ensure that mineral development contributes to the mitigation of and adaptation to climate change and makes prudent use of natural resources.		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓		✓		✓			✓	✓	✓	✓	✓
10 Ensure that mineral development protects and enhances the health, well-being, safety and amenity of people and communities in and around Worcestershire.		✓	✓	✓	✓	✓									✓	✓	✓					✓		✓	✓	✓	✓	✓
11 Ensure that mineral development protects and enhances the natural and historic environment and distinctive local character.		✓	✓	✓	✓	✓						✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
12 Ensure that mineral development protects and enhances the vitality of the local economy.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓		✓		✓	✓	✓	✓	✓
13 Optimise opportunities to integrate economic, social and environmental benefits through the delivery of high-quality multifunctional green infrastructure throughout the life of the mineral development.	✓	✓	✓	✓	✓	✓									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

Developing the Third Stage Consultation



The **vision** and **objectives** in this *Third Stage Consultation* have been developed taking into account the comments received in response to the *Second Stage Consultation on the Minerals Local Plan,*[8] the *Initial Sustainability Appraisal,*[9] national and local planning policy and best practice.

Vision

The *Second Stage Consultation on the Minerals Local Plan*[10] asked whether the **vision** successfully addressed the following broad issues:

a) How much mineral resource will be worked in Worcestershire and broadly when this will take place;

b) Where minerals should be extracted;

c) How minerals sites should be worked;

d) How minerals sites should be restored.

The results were mixed with almost the same numbers of respondents answering "yes" to these questions as "no". The *Second Stage Consultation on the Minerals Local Plan*[11] also asked if the **vision** addressed the principles of the *National Planning Policy Framework*. Overall respondents agreed that these principles had been addressed.

A number of wording changes were suggested to clarify the intentions of the **vision** and **objectives** and some respondents commented that they would like to see the **vision** and **objectives** become more locally specific. The need for greater local specificity was also raised in the *Initial Sustainability Appraisal.*[12] These comments have been taken into account in developing the revised vision in the *Third Stage Consultation.* The document also includes a more detailed **Portrait of Worcestershire** (**Chapter 2**) and a section outlining the key issues for the Minerals Local Plan which are intended to highlight the locally distinctive issues that the vision is seeking to address.

Many of the other concerns raised in relation to the **vision** and **objectives** were due to their strategic nature and the desire for communities to have greater certainty at a site level. The *Third Stage Consultation* includes a detailed policy framework identifying the areas where development is expected and how the impacts of development will be managed. These policies address many of the issues raised in response to the **vision** and **objectives** in the *Second Stage Consultation on the Minerals Local Plan.*[13]

8 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
9 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
10 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
11 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
12 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
13 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".

How much mineral resource will be worked in Worcestershire and when this will take place

In the *Second Stage Consultation on the Minerals Local Plan*[14] the draft vision stated that "*To enable sustainable supply in the long-term, reserves of aggregates will meet minimum landbank targets by halfway through the plan-period*". Respondents suggest that this implied that the Mineral Planning Authority was avoiding making adequate provision. This was not the intention. This milestone was included because evidence suggested that it could be difficult to reach the landbank requirements early in the plan period. There was no intention to prevent development coming forward. The same milestone is included in the *Third Stage Consultation* for sand and gravel but the wording of the **vision** has been revised to make it clear that landbanks required by national policy will be delivered at the earliest opportunity. This approach is also reflected in **policy MLP 8**. The same milestone has not been included for crushed rock supply in the *Third Stage Consultation.* This change has been made in response to concerns over crushed rock supply raised in responses to the *Second Stage Consultation* and subsequent discussions under the Duty to Cooperate.[15]

Chapter 6 addresses the steady and adequate supply of all mineral resources in detail.

Where minerals should be extracted

While a restoration-led approach to the location of mineral development was largely supported in response to the *Second Stage Consultation on the Minerals Local Plan,*[16] greater clarity was sought with regard to the areas where development would take place. To enable the plan to provide greater certainty about the location of development, two "calls for sites" were conducted during summer 2014 and summer 2015. This resulted in **specific sites** and **preferred areas** being allocated in the *Third Stage Consultation* alongside **strategic corridors** to direct any windfall development. These are addressed in **Chapter 5** which includes a much greater level of detail regarding the location of mineral development than that provided in the *Second Stage Consultation on the Minerals Local Plan.*[17] An interactive mapping tool has been developed to accompany this *Third Stage Consultation*.[18]

How minerals sites should be worked and restored

The focus on green infrastructure and its components was largely welcomed and key stakeholders were pleased with the approach to environmental sustainability. However the *Initial Sustainability Appraisal*[19] noted that the **vision** appeared to focus on the environmental benefits of a green infrastructure approach to restoration ahead of the economic and social imperatives that it can deliver.

The *Initial Sustainability Appraisal*[20] also suggested that a greater focus was needed on the social need for mineral development to meet people's fundamental needs and that the vision would benefit from reference to the need to mitigate and adapt to climate change, reduce energy and water consumption and maximise the use of sustainable transport. These suggestions have been integrated into the **vision** and **objectives** in the *Third Stage Consultation*.

Objectives

The *Second Stage Consultation on the Minerals Local Plan*[21] proposed eight draft objectives:

Draft objective 1: Ensure adequate and steady supply of aggregate, industrial and energy minerals over the life of the plan.

Draft objective 2: Ensure the long term sustainability of supply of minerals resources.

Draft objective 3: Protect and enhance Worcestershire's key economic sectors.

Draft objective 4: Ensure mineral operations are resilient to and mitigate the impacts of climate change.

Draft objective 5: Utilise mineral restoration to enhance the climate change resilience of the county.

Draft objective 6: Protect and enhance the natural and historic environment.

Draft objective 7: Protect and enhance health and amenity.

Draft objective 8: Involve all those affected as openly and effectively as possible.

14 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
15 See Worcestershire County Council (2016) *Minerals Local Plan Background Document - Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*, available at **www.worcestershire.gov.uk/mineralsbackground**.
16 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
17 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
18 See the interactive minerals mapping tool available at **www.worcestershire.gov.uk/minerals**
19 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
20 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
21 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".

Overall these objectives and the issues they sought to address were supported. However the difference between objectives 1 and 2 was considered to be unclear and there was concern over the extent to which objectives as worded in *The Second Stage Consultation on the Minerals Local Plan*[22] would deliver the vision; at least a third of respondents said the objectives 3, 4, 5, 7 and 8 would not deliver the vision. This was partially due to the lack of policy detail in *The Second Stage Consultation on the Minerals Local Plan,*[23] but it showed a clear need to reconsider the vision, objectives and relationship between them. This has been undertaken in the *Third Stage Consultation* which has substantially revised the **vision** and **objectives** to address the issues raised in response to the *Second Stage Consultation on the Minerals Local Plan*[24] and *Initial Sustainability Appraisal.*[25]

Other issues raised

Several consultees expressed strong support for the retention of the sieve test. The rationale for the removal of the sieve test was outlined in Appendix 1 of *The Second Stage Consultation on the Minerals Local Plan,*[26] along with a detailed explanation of changes to the regulatory and national policy context since the adoption of the *1997 Hereford and Worcester Minerals Local Plan* and the reasons why the approach to identifying constraints and establishing "buffer zones" is substantially different to what it was in 1997. No evidence was submitted in response to *The Second Stage Consultation on the Minerals Local Plan*[27] to undermine the justification set out in the appendix. The Mineral Planning Authority considers that the decision-making policies proposed in this *Third Stage Consultation* document address these issues in a more effective and sustainable manner than the sieve test, enabling a better balance between maximising resource efficiency and protecting the environment and communities from unacceptable adverse impacts.

22 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
23 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
24 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
25 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6
26 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
27 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".

Third Stage Consultation on the Minerals Local Plan: Consultation Questions

Q3.1 Do the vision and objectives set the appropriate priorities to address the key issues for mineral planning in Worcestershire?

Vision	Objective 5	Objective 9
Objective 1	Objective 6	Objective 10
Objective 2	Objective 7	Objective 11
Objective 3	Objective 8	Objective 12
Objective 4	Objective 9	Objective 13

Q3.2 Do the objectives set the appropriate priorities to ensure that the vision will be achieved?

Vision	Objective 5	Objective 9
Objective 1	Objective 6	Objective 10
Objective 2	Objective 7	Objective 11
Objective 3	Objective 8	Objective 12
Objective 4	Objective 9	Objective 13

Q3.3 Do the vision and objectives together address the principles of the National Planning Policy Framework by:

a) contributing to the achievement of sustainable development?

b) seeking opportunities to achieve each of the economic, social and environmental dimensions of sustainable development, delivering net gains across all three dimensions?

c) setting out the strategic priorities for the area?

d) containing a clear strategy for enhancing the natural, built and historic environment?

e) reflecting the vision and aspirations of local communities?

f) taking an approach which is aspirational but realistic?

Q3.4 Are there any wording changes which you would suggest to Chapter 3 to improve clarity or any other issues which you think should be considered?

Conveyor at Clifton Quarry, Worcestershire

4. Key diagram

Key diagram

4.1 The key diagram for the Worcestershire Minerals Local Plan is shown in **Figure 4.1**. This identifies the **strategic corridors**, **specific sites** and **preferred areas** that form part of the **spatial strategy**.

Interactive minerals mapping tool

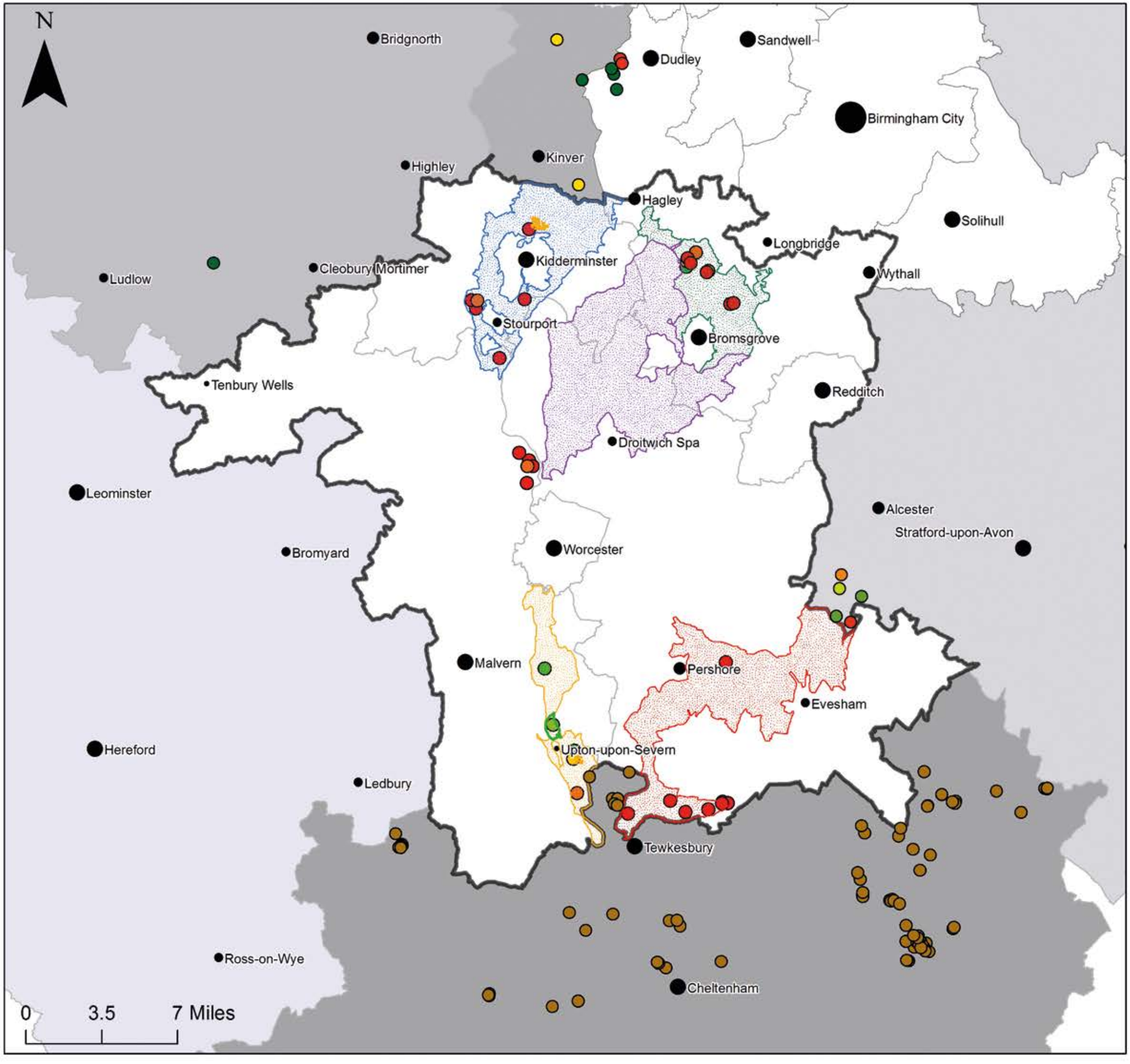
4.2 The Mineral Planning Authority has also prepared an interactive minerals mapping tool available at **www.worcestershire.gov.uk/minerals** which is intended to assist in the use and implementation of the Minerals Local Plan.

4.3 The interactive minerals mapping tool gives indicative boundaries of the current and past minerals sites with express or deemed planning permission. It is not and does not purport to be an official record of all minerals sites in the county. In particular, it does not replace the information held on the planning register. For detailed information about individual sites and site boundaries relevant planning permissions should be referred to.

4.4 It shows mineral deposits data derived from 1:50,000 scale British Geological Society Digital Data under Licence 2001/125. For more detail on the interpretation of the mineral resources in the county, see the *Analysis of Mineral Resources* and the background documents on specific minerals which are available at **www.worcestershire.gov.uk/mineralsbackground**

4.5 Other data is included to assist in the use and implementation of the Minerals Local Plan, but may not be the latest available information. Data sources include the Coal Authority, data.gov.uk, Herefordshire and Worcestershire Earth Heritage Trust, Worcestershire Biological Records Centre, and Worcestershire County Council. Data will be updated as far as possible alongside publication of the *Minerals and Waste Local Development Framework Annual Monitoring Report*.

Figure 4.1 Key diagram



Legend

Strategic Corridors

- Avon and Carrant Brook Strategic Corridor
- Lower Severn Strategic Corridor
- North East Worcestershire Strategic Corridor
- North West Worcestershire Strategic Corridor
- Salwarpe Tributaries Strategic Corridor

Allocated Sites

- Specific Site
- Preferred Area

Mineral Sites

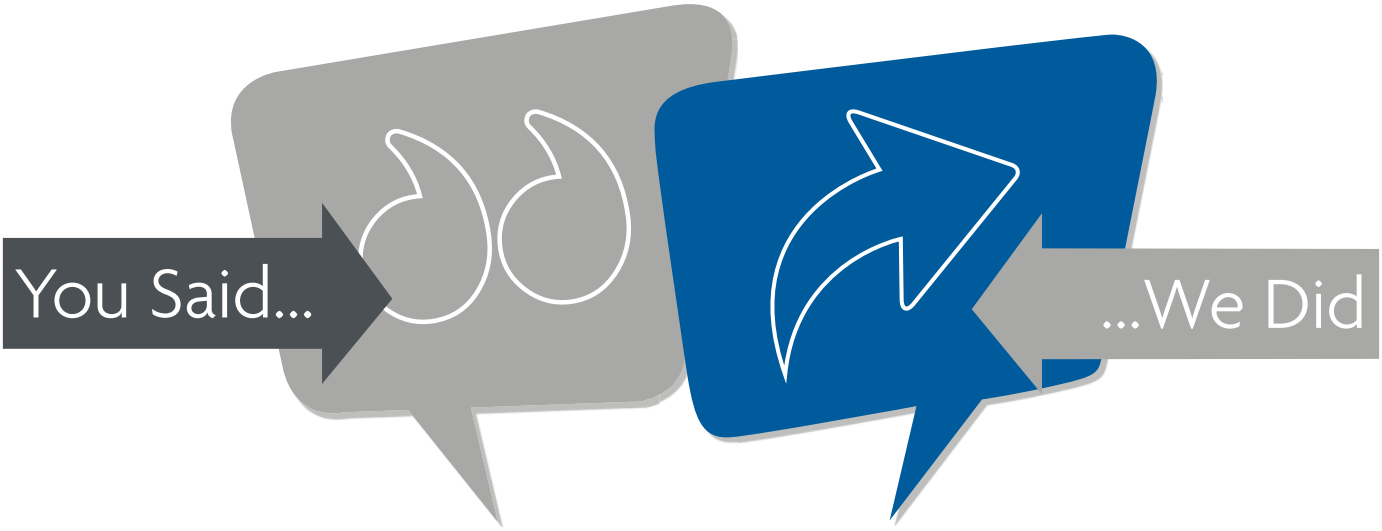
Status

- Active
- Permitted (not commenced)
- Inactive
- Undergoing restoration
- Restored - in aftercare
- Restored (closed)

Out of county minerals sites within 10km

Status

- Active
- Allocated in adopted plan
- Allocated in draft plan
- Inactive
- Undergoing Restoration
- Restored (closed)
- Historic



The *Second Stage Consultation* did not include a key diagram but set out the Mineral Planning Authority's intention to prepare one. Comments raised regarding the location of development are fully considered in **Chapter 5**.

Third Stage Consultation on the Minerals Local Plan: Consultation Questions

Q4.1 Is the key diagram effective in indicating broad locations for strategic development?

Q4.2 Are there any changes which you would suggest to the key diagram to improve clarity or any other issues which you think should be considered?

Q4.3 Are there any changes which you would suggest to the interactive minerals mapping tool to improve clarity or any other issues which you think should be considered?

Clifton sand and gravel working, near Worcester

5. Spatial strategy: location of mineral development

Introduction

5.1 In order to direct mineral development to appropriate locations and realise the potential for minerals development to address some of Worcestershire's important economic, environmental and social issues, five **strategic corridors**[1] for where mineral development should be located are identified in **Chapter 4** (**Key Diagram**).

5.2 These **strategic corridors** contain clusters of key and significant mineral resources[2] within coherent landscapes. In order to identify **strategic corridors** where gains can be maximised, the distribution of mineral resources was considered alongside the potential for mineral development to positively impact on green infrastructure at a landscape scale (see **chapter 3**). Development within the **strategic corridors** is more likely to contribute to meaningful delivery of green infrastructure than development outside the corridors as it will enable the achievement of benefits across multiple sites that are greater than could be achieved by considering each site in isolation.

5.3 The precise definition of the strategic corridors was influenced by the components of green infrastructure.[3] Due to the ability of landscape character to encompass and influence many aspects of green infrastructure, and the benefit of precise boundaries established through the *Landscape Character Assessment Supplementary Guidance*, landscape character was the predominant factor used to identify cohesive clusters of resources and to identify the precise boundaries of the strategic corridors.

5.4 The **strategic corridors** do not include all known mineral resources in the county, but seek to reflect a 'best fit' of where mineral development and green infrastructure enhancement overlap and can best work together. Some mineral resources in close proximity to the **strategic corridors** have been excluded because they do not have significant potential to contribute towards the delivery of coordinated benefits being in different landscape types and therefore unable to contribute to a cohesive and coordinated approach at a landscape-scale. While individual sites might be able to deliver on-site green infrastructure benefits in isolation, much greater gains can be delivered from a network approach.

1 The **strategic corridors** have the status of Areas of Search as set out in the *National Planning Policy Framework*.
2 Worcestershire County Council (2016) "*Analysis of Mineral Resources in Worcestershire*", available at www.worcestershire.gov.uk/minerals.
3 See **Appendix 3** for further details.

Sites that are close by but in a different landscape type are unlikely to contribute towards the habitat network for that corridor or have the same priorities in terms of landscape character, ecological zone or water environment.

5.5 Priorities for each of the **strategic corridors** are identified in this chapter (policies **MLP 2** to **MLP 6**). These priorities will be a fundamental driver in the designing, working and restoration of individual sites and should be integrated into proposals from the outset. The priorities seek to maximise social, economic and environmental gains without placing an undue burden on minerals developers.

5.6 The steady and adequate supply of minerals in Worcestershire will be delivered through:

- the county's **existing mineral sites** with remaining permitted reserves,
- the three **specific sites** and two **preferred areas** which are identified within the **strategic corridors**,[4] and
- **windfall sites** in the **strategic corridors** which may be brought forward over the life of the plan.

Strategic location of development

Policy MLP 1: Strategic Location of Development

Contributing to:

Objective 1 Objective 3 Objective 4 Objective 5 Objective 6 Objective 7 Objective 12 Objective 13

a) Planning permission will be granted for mineral development within the **strategic corridors** where it enables extraction of remaining reserves at existing sites or sustainable supply of minerals from:

- specific sites;
- preferred areas; or
- windfall sites.

b) Planning permission will only be granted for mineral development outside the strategic corridors where it is demonstrated that:

i) the mineral resource is locally or nationally important and has qualities which mean sustainable supply of the mineral cannot be delivered within the identified strategic corridors; or

ii) winning and working of a resource will prevent that resource from being needlessly sterilised by non-minerals development.

Reasoned justification

Proposals within the strategic corridors

5.7 There is a presumption in favour of sustainable development where the proposed development is within a **strategic corridor** and will contribute towards the quality, character and distinctiveness of that corridor (in line with **Policies MLP 2** to **MLP 6**), whether it is an existing site, a site allocated as a **specific site** or a **preferred area**, or is a **windfall site**. Proposals will need to be assessed against other policies in the development plan to determine whether they constitute sustainable development.

Existing sites

5.8 All of the existing mineral sites with remaining permitted reserves[5] in Worcestershire (shown on the **Key Diagram** in **Chapter 4**) are within the **strategic corridors**. Over the life of the plan it is anticipated that periodic reviews of mineral planning permissions (ROMPs) or proposals to vary conditions may arise to alter the development already permitted at some or all of these sites. This is a normal occurrence over the life of a mineral site and might include alterations to

4 The **strategic corridors**, **specific sites**, **preferred areas** and **existing mineral sites** can also be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

5 At 31st December 2015.

planning conditions to allow the use of more resource efficient plant, to meet requirements of new legislation, or to address site-level issues which could not reasonably have been anticipated at the original application stage.

5.9 Planning applications for variations of conditions at existing sites will be expected to demonstrate that the proposal will enable the continued extraction of the remaining reserves at the sites. Enabling changes to existing sites in this way will facilitate the prudent use of natural resources and maximise the ability of existing sites to contribute to the steady and adequate supply of mineral resources. It will also offer opportunities for existing workings to contribute towards the priorities identified for each corridor (**Policies MLP 2** to **MLP 6**).

Specific sites and preferred areas

5.10 Three **specific sites** and two **preferred areas** have been allocated within the **strategic corridors**.[6] These are:

- **Specific sites:**
  - Clifton East
  - Clifton South
  - Land at Ryall North[7]
- **Preferred areas:**
  - Ryall East
  - Land North of Wolverley Road

5.11 These sites were proposed by mineral operators, landowners and agents during the development of the Minerals Local Plan. They were subject to a *Deliverability Assessment*[8] and met the following tests:

- **Specific sites:**[9] Viable resources are known to exist and landowners are supportive of minerals development,[10] and the proposal is likely to be acceptable in planning terms.[11]
- **Preferred areas:**[12] Areas of known resource where planning permission might reasonably be anticipated.[13]

5.12 Site plans, the *Deliverability Assessment* matrix and "informatives"[14] provided by statutory consultees and other relevant bodies about each of the **specific sites** and **preferred areas** are set out in **Appendix 2**.

5.13 Planning applications for **specific sites** and **preferred areas** will be expected to demonstrate that the proposed development will enable the sustainable supply of minerals and contribute towards the priorities identified for each corridor in **Policies MLP 2** to **MLP 6**.

A further 22 sites were submitted for consideration but did not meet the tests in the Worcestershire Minerals Local Plan Background Document (September 2016) *Call for Sites – Deliverability Assessment* for allocation as **specific sites** or **preferred areas**. These can be viewed in **Annex 1**, the *Deliverability Assessment* and on the interactive minerals mapping tool available at **www.worcestershire.gov.uk/minerals**.

If further information about any of the sites is received, or further sites are proposed in response to this consultation, the *Deliverability Assessment* will be revised and any additional **specific sites** and **preferred areas** will be subject to further public consultation.

6 The strategic corridors, specific sites, preferred areas and existing mineral sites can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

7 Four different site boundaries were submitted for consideration at Ryall North during the development of the Minerals Local Plan: "Land at Ryall North (Croome Estate)", "Ryall North (Cemex)", "Land South of Ryall North" and "Ryall Court Farm". Two of these had insufficient resources to meet the tests to be allocated as specific sites in their own right; however, the largest area (Land at Ryall North, Croome Estate) encompasses all of the proposals and meets the requirements for allocation as a specific site. For further information see Appendix 2 and Worcestershire Minerals Local Plan Background Document (September 2016) *Call for Sites – Deliverability Assessment*, available at www.worcestershire.gov.uk/mineralsbackground.

8 Worcestershire Minerals Local Plan Background Document (September 2016) *Call for Sites – Deliverability Assessment*, available at www.worcestershire.gov.uk/mineralsbackground.

9 Specific sites are those which were graded "green" in the Worcestershire Minerals Local Plan Background Document (September 2016) *Call for Sites – Deliverability Assessment*, available at www.worcestershire.gov.uk/mineralsbackground.

10 The Worcestershire Minerals Local Plan Background Document (September 2016) *Call for Sites – Deliverability Assessment* considers "viable resources" to mean sites with over 600,000 tonnes of mineral resource proven by site-level resource assessment, specified processing options and confirmed mineral operator and landowner interest.

11 The Worcestershire Minerals Local Plan Background Document (September 2016) *Call for Sites – Deliverability Assessment* considers "acceptable in planning terms" to mean sites within the strategic corridors and with no significant transport issues which cannot be managed through appropriate conditions. Other economic, environmental and amenity issues have not been included in consideration of "appropriate in planning terms" as the level of detail necessary at this stage is different to that required at full application stage. Applications will be required to adequately address such issues in accordance with the policy framework in the Minerals Local Plan and the wider Development Plan.

12 Preferred areas are those which were graded "amber" in the Worcestershire Minerals Local Plan Background Document, September 2016, *Call for Sites – Deliverability Assessment*, available at www.worcestershire.gov.uk/mineralsbackground.

13 "Areas of known resource where planning permission might reasonably be anticipated" is considered to mean sites that could potentially pass the tests of the *Deliverability Assessment* but where some uncertainty exists.

14 In order to assess each submitted site, officers conducted site visits and statutory consultees and other bodies were consulted asking whether they considered the sites were likely to be acceptable in planning terms. Some consultees found it difficult to comment on whether the sites were likely or unlikely to be acceptable in planning terms due to the lack of specific information about how the sites would be worked or restored, but the informatives in Appendix 2 outline the site specific issues raised. These should be used to inform development proposals and may help highlight issues that need to be addressed to meet the policies of the Development Plan.

Windfall sites

5.14 The **existing mineral sites**, **specific sites** and **preferred areas** are not sufficient to meet the requirements for sand and gravel over the life of the plan,[15] and no sites have been allocated for other types of mineral resource. **Windfall sites** will therefore be required to meet the levels of supply required over the life of the plan.

5.15 Planning applications for **windfall sites** will be expected to demonstrate that the proposed development will enable the sustainable supply of minerals and contribute towards the priorities identified for each corridor in **Policies MLP 2** to **MLP 6**.

Proposals outside the strategic corridors

Locally or nationally important mineral resources

5.16 The identification of **strategic corridors** was based on the consideration of key and significant sand and gravel resources and clay resources thought to be of economic value (Mercia Mudstone).[16] Other mineral deposits are known to exist within Worcestershire, however the evidence available at the time of developing the plan indicated that these are not of local or national importance. Should the need or uses for deposits mean that they become locally or nationally important during the life of the plan, **Policy MLP 13** would enable the sustainable supply of those resources.

5.17 Where development proposals are for minerals with particular qualities which cannot be worked within the strategic corridors, planning applications will be expected to contain a level of detail proportionate to the proposal submitted. Sufficiently robust and specific geological and viability information and market data should demonstrate the local or national need for the mineral, its specific properties or qualities, and the reasons that this material cannot be worked within the **strategic corridors**. Proposals need to demonstrate how they enable the sustainable supply of minerals and contribute towards the delivery of green infrastructure on a site-by-site basis.

Sand and gravel

5.18 The key and significant sand and gravel resources[17] in Worcestershire have been considered in the development of the **strategic corridors**. The corridors include 70%[18] of the county's key and significant sand and gravel resources. This is adequate to meet identified supply levels over the life of the plan (see **Chapter 6**) and sand and gravel development outside of the **strategic corridors** will be wholly exceptional.

Brick clay

5.19 Brick clay has informed the identification of the **strategic corridors.** The Mercia Mudstone Group deposit is considered to be an economically important resource in the county and 20%[19] of this is within the **strategic corridors**. The **strategic corridors** also encompass other clay formations.[20] Proposals for the working of brick clay outside of the **strategic corridors** would need to demonstrate why they could not take place in the **strategic corridors**.

Silica sand

5.20 The known sand and gravel deposits in Worcestershire have been considered in the development of the **strategic corridors**, including the silica sands which are contained within the solid sands of the Wildmoor Formation. The **strategic corridors** include 72% of the Wildmoor Formation in the county. This is adequate to meet supply levels over the life of the plan, and therefore silica sand development outside of the corridors will be wholly exceptional.

Building stone

5.21 There can be significant variations in the appearance and characteristics of building stone, even within the same broad stone type. It is therefore difficult to identify resources that might be required through the life of the plan. 9% of the county's known former building stone quarries[21] are within the **strategic corridors**.

5.22 Where there is demand for building stone in the county and building stone with those particular properties cannot be found in the **strategic corridors**, this could provide a strong justification for the development of windfall sites for the working of building stone outside the **strategic corridors**.

15 See **Chapter 5**.
16 Key and significant crushed rock resources were considered, but the resultant corridors have not been included in the plan as the constraints identified in Chapter 2 mean they are unlikely to be deliverable. See Appendix 3 for further details of how the **strategic corridor** boundaries were defined.
17 Worcestershire County Council (2016) *Analysis of Mineral Resources in Worcestershire*, available at www.worcestershire.gov.uk/minerals.
18 By area.
19 By area.
20 There are significant areas of Sherwood Sandstone and Lias Group deposits within the strategic corridors which may possess some clay properties. See Worcestershire County Council (2015) *Clay in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.
21 14 out of 161 quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone* up to March 2016. See http://www.buildingstones.org.uk.

Crushed rock

5.23 The constraints around the crushed rock resources in Worcestershire[22] mean that crushed rock working is unlikely to be deliverable over the life of the plan. As such, the Minerals Local Plan does not identify **strategic corridors** for crushed rock.[23]

5.24 However, there is demand for crushed rock in the county and, as there are no known crushed rock resources in the **strategic corridors**, this could provide a strong justification for the development of windfall sites for crushed rock working outside of the **strategic corridors**.

The delivery constraints outlined in **Chapter 2**, the lack of interest in Worcestershire's resources shown by the minerals industry over many years, and the fact that no sites for crushed rock have been proposed in response to "calls for sites" in 2014 and 2015 indicate that it is unlikely that Worcestershire will be able to provide crushed rock for the foreseeable future. These issues have been discussed in detail with the Aggregate Working Parties in the West Midlands, South West, East Midlands and South Wales (see Minerals Local Plan background document *Strategic cross boundary issue: Crushed rock supply in Worcestershire - Summary of action undertaken under the duty to cooperate*, 2016, available at **www.worcestershire.gov.uk/mineralsbackground**).

In developing the **spatial strategy**, two possible **strategic corridors** containing crushed rock resources were identified around the Malvern Hills and Bredon Hill (see Annex 1). However, the constraints outlined above indicate that they would be unlikely to be deliverable. They have therefore not been included in this consultation, instead, the policy framework in the *Third Stage Consultation on the Minerals Local Plan* would enable crushed rock development to come forward should specific proposals be able to overcome those constraints.

Energy minerals and other industrial minerals

5.25 Other mineral deposits in Worcestershire are not considered to be locally or nationally important resources and have not been taken into account in the identification of the **strategic corridors**. Proposals would need to be justified against the points in part b of **Policy MLP 1**.

Winning and working of resources to prevent sterilisation

5.26 If not properly planned, non-mineral development can result in the sterilisation of mineral resources. The **strategic corridors** do not incorporate all of the county's mineral resources, and whilst development of the resources outside the **strategic corridors** is not promoted these resources are nevertheless part of a finite resource which needs to be used prudently.

5.27 Sterilisation of locally and nationally important mineral resources needs to be prevented in line with the policies in **Chapter 8**. Proposals might include borrow pits on or near to development sites, the utilisation of mineral resources worked as part of site works such as sustainable drainage schemes, site landscaping or formation of other features, or extracting some or all of the mineral resources in advance of the non-mineral development taking place or in phases alongside it.

5.28 Planning applications will be expected to demonstrate that the proposed development will prevent resources from being needlessly sterilised and that the relationship between the minerals extraction and subsequent development will be satisfactorily managed. This might include details of how both developments will be phased, or details of how campaign working and stockpiling of the mineral resource would ensure it remains available for future use.

Strategic Corridor Priorities

5.29 The **strategic corridors** have an inherent landscape coherence (see **Appendix 3**) and the key characteristics and landscape guidelines for the landscape types within them provide the starting point for identifying priorities for each corridor.[24] Other green infrastructure components are considered within this context. The opportunities for mineral development to contribute to strategic issues on a landscape-scale[25] take account of:

22 See **Chapter 2: Portrait of Worcestershire**.

23 This has been subject to Duty to Cooperate discussions with the Aggregate Working Parties of the West Midlands, South West, South Wales and East Midlands. See Worcestershire County Council (2016) *Minerals Local Plan Background Document - Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*, available at www.worcestershire.gov.uk/mineralsbackground.

24 See Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance* available at www.worcestershire.gov.uk/lca Worcestershire County Council and Forestry Commission (2010) *Trees and Woodland in Worcestershire: Biodiversity and Landscape Guidelines for their planting and management* http://www.worcestershire.gov.uk/downloads/file/4790/woodland_guidelines.

25 Data can be viewed on the interactive minerals mapping tool at www.worcestershire.gov.uk/minerals.

- informal access and recreation opportunities including public rights of way and other access networks[26] and proximity to, demand for and capacity of publicly accessible green space;[27]
- existing habitats networks and opportunities for biodiversity enhancement at landscape-scale;[28]
- agricultural land quality,[29] the predominant agricultural land use in the area and the role it plays in local character and distinctiveness;[30]
- areas where there is the greatest opportunity for networks of geological and geomorphological features to improve the legibility and understanding of the environment and structure and unity of the landscape;[31]
- water environment issues affecting the corridor and its catchment, with specific consideration of fluvial and surface water flooding and water quality.[32]

The historic environment was considered on a corridor scale,[33] but there are significant limitations to interpreting historic environment data at the landscape-scale. The historic environment is better suited to consideration on a site-by-site basis.

5.30 The local policy context as set out in Local Plans and Neighbourhood Plans has also informed the development of these priorities

5.31 The priorities for each corridor are likely to be delivered through the development of multiple sites. Each development proposal will need to be assessed on a site-by-site basis. The priorities should guide how sites are designed, worked and restored so that mineral development across the corridor over the life of the plan is coordinated to deliver the priorities. The local context will influence how the priorities can best be integrated at each stage of a site's life.

5.32 Three of the **strategic corridors**[34] are partially within the Green Belt. Mineral extraction is not inappropriate in the Green Belt provided the openness of the Green Belt is preserved and there is no conflict with the purposes of including land in the Green Belt.[35] However associated buildings and infrastructure may be inappropriate. Any proposals would need to be assessed against relevant national and local Green Belt policy.

Avon and Carrant Brook Strategic Corridor

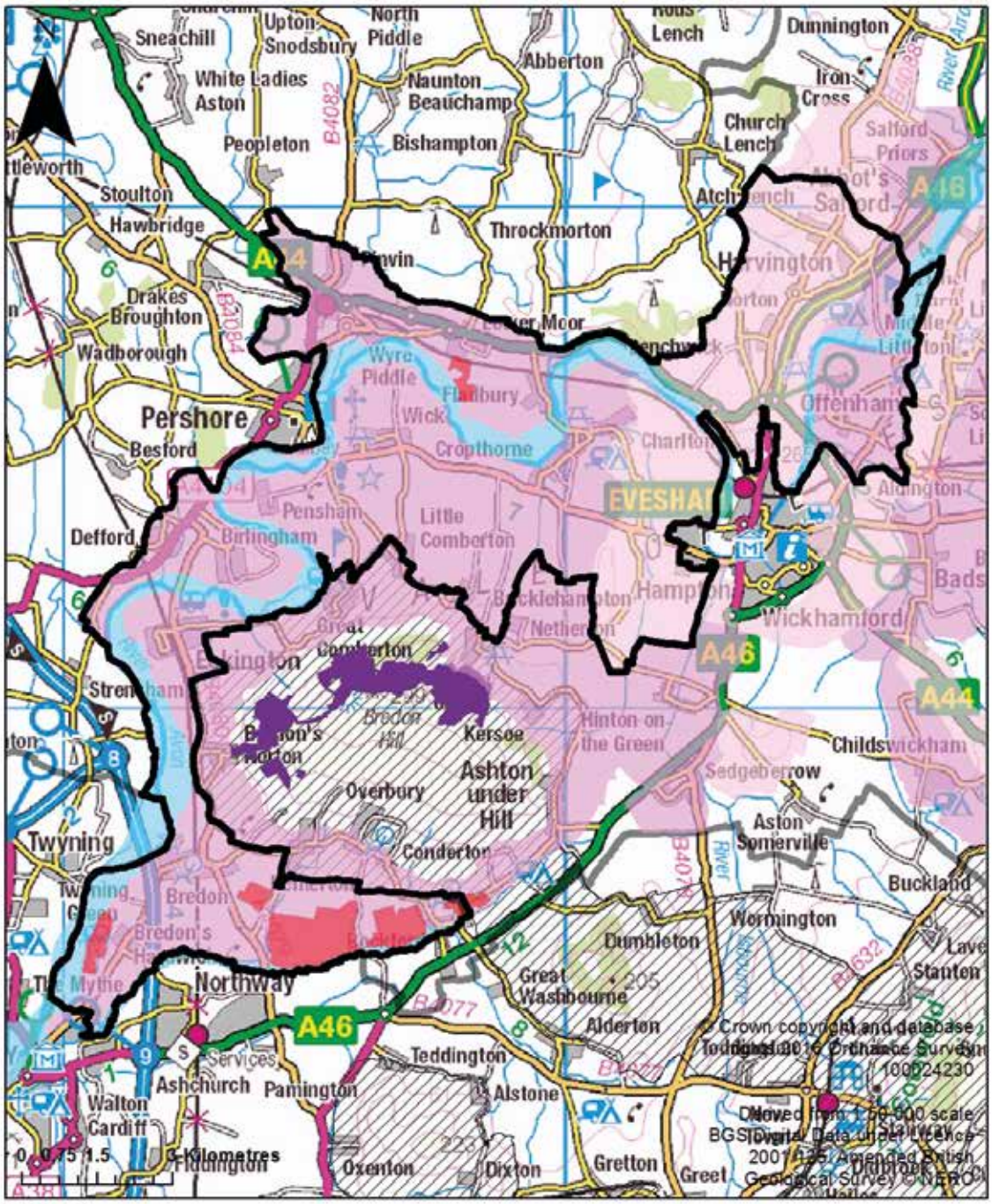
5.33 The **Avon and Carrant Brook Strategic Corridor** is identified in the **Key Diagram** in **Chapter 4** and shown in detail in **Figure 5.1**. It contains 33%[36] of the county's key and significant terrace and glacial sand and gravel resources and 1%[37] of the county's Mercia Mudstone clay resource.[38] The corridor is widely underlain by clays of the Lias Group which is not considered to be a locally or nationally important mineral resource.

5.34 There have been eight historic workings[39] but there are no current workings,[40] **specific sites** or **preferred areas** in the **Avon and Carrant Brook Strategic Corridor**.

5.35 The **Avon and Carrant Brook Strategic Corridor** is focused around the *Riverside Meadows* landscape type and the village farmlands landscape types which surround them (*Principal Village Farmlands* and *Village Farmlands with Orchards*).[41] The northern boundary of the corridor is defined by the village farmland landscapes, which extend into Warwickshire in the east and Gloucestershire in the south. The boundary of the Cotswolds Area of Outstanding Natural Beauty has been used alongside landscape character to define the south-east boundary of the corridor.

26 Public rights of way, Sustrans routes, long distance routes and the Geopark Way.
27 Worcestershire County Council (2013) *Green Infrastructure Framework 3: Access and Recreation* available at www.worcestershire.gov.uk/gi.
28 Based on the Biodiversity Delivery Areas used by the Local Nature Partnership and Biodiversity Action Plan Partnership (these can be viewed on the interactive minerals mapping tool at www.worcestershire.gov.uk/minerals), the ecological zones identified in Worcestershire County Council (2013) *Biodiversity and Minerals in Worcestershire: Guidance for the sustainable management of Biodiversity Action Plan habitats at Worcestershire mineral sites* available at www.worcestershire.gov.uk/mineralsbackground and high-level consideration of the Worcestershire Habitat Inventory available at www.worcestershire.gov.uk/whi.
29 Based on the classification of best and most versatile agricultural land, which can be viewed on the interactive minerals mapping tool at www.worcestershire.gov.uk/minerals.
30 Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance* available at www.worcestershire.gov.uk/lca.
31 The Malvern Hills and Cotswolds Areas of Outstanding Natural Beauty, the Abberley and Malvern Hills Geopark.
32 Based on *River Severn Catchment Flood Management Plan* and Water Framework Directive "Severn Middle Worcestershire" catchment.
33 This took account of the Worcestershire Historic Environment Record and Worcestershire County Council (2012) *Worcestershire Historic Landscape Characterisation.*
34 The North East Worcestershire Strategic Corridor, North West Worcestershire Strategic Corridor and Salwarpe Tributaries Strategic Corridor are all partially within the Green Belt. This can be viewed on the interactive minerals mapping tool at www.worcestershire.gov.uk/minerals.
35 Department for Communities and Local Government (March 2012) *National Planning Policy Framework*, paragraph 90.
36 By area.
37 By area.
38 For further information, see *Analysis of Mineral Resources in Worcestershire (2016)* available from www.worcestershire.gov.uk/mineralsbackground.
39 Lower Moor Quarry, Court Farm, Beckford Quarry, Costwold Plant Hire workings, Carrant Brook Pit, Aston Mill, Kemerton Quarry and Bredon's Hardwicke Quarry. These are shown on Figure 5.1 and can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
40 As of November 2016.
41 See Worcestershire's Landscape Character Assessment maps and guidance at www.worcestershire.gov.uk/lca.

Figure 5.1 Avon and Carrant Brook Strategic Corridor



Legend

- Avon and Carrant Brook Strategic Corridor
- Area of Outstanding Natural Beauty
- **Mineral Sites**
- special area of conservation
- **Status**
- Pre 1954 Minerals sites
- Restored (closed)
- **Landscape Character Types**
- Principal Village Farmlands
- Riverside Meadows
- Village Farmlands with Orchards

Policy MLP 2: Avon and Carrant Brook Strategic Corridor

Contributing to:

Objective 1 Objective 3 Objective 4 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted for mineral development within the **Avon and Carrant Brook Strategic Corridor** that contributes towards the quality, character and distinctiveness of the corridor through the delivery and enhancement of high quality green infrastructure networks.

The priorities for the **Avon and Carrant Brook Strategic Corridor** are to:

- optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements;
- improve the network of public access routes;
- in the *Riverside Meadows* landscape type, optimise opportunities to return to patterns and processes of natural flooding cycles;
- in the *Riverside Meadows* landscape type, conserve, enhance and restore linear tree belts along hedge and ditch lines and along the banks of watercourses;
- in the *Principal Village Farmlands* landscape type and *Village Farmlands with Orchards* landscape type, facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create wetland habitats;
- in the *Principal Village Farmlands* landscape type and *Village Farmlands with Orchards* landscape type, conserve, enhance and restore lines of hedgerow fruit trees that define the planned medium to large scale field patterns.

A level of technical study appropriate to the proposed development will be required to demonstrate how the landscape-scale priorities for the corridor and any site-specific considerations have informed the development proposals.

Reasoned justification

5.36 **Policy MLP 2** outlines the strategic framework for the delivery of multifunctional green infrastructure in the **Avon and Carrant Brook Strategic Corridor**. The priorities for the corridor will contribute to each of the green infrastructure components and climate change adaptation and mitigation as outlined in **Table 5.1**. These are likely to be delivered through the combination of development of multiple sites, as well as through amended planning permissions at existing sites as opportunities arise.

5.37 The corridor priorities can be integrated and delivered alongside each other. In some cases it may not be possible or desirable to deliver all priorities on a single site. The size of the site and other local factors should be taken into account to ensure that the site design, and the priorities it contributes towards, are the most appropriate for that location. Where focusing on fewer priorities would deliver greater overall benefits than trying to deliver against all of the priorities for the corridor this will be supported.

Table 5.1. Contribution of Avon and Carrant Brook Strategic Corridor priorities to green infrastructure and climate change resilience and mitigation

	GI Functions							
Key ● = strong positive contribution ♦ = potential positive contribution ? = unclear X = likely conflict	Access and recreation (policy MLP 17)	Biodiversity (policy MLP 18)	Landscape character and local distinctiveness (policy MLP 19)	Agriculture (policy MLP 20)	Geodiversity (policy MLP 21)	Water environment (policy MLP 22)	Historic Environment (policy MLP 23)	Climate change resilience and mitigation (policy MLP 15)
Across the whole strategic corridor								
Optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements	?	●	●	♦	?	●	♦	●
Improve the network of public access routes	●	?	♦	?	♦	?	♦	?
In the *Riverside Meadows* landscape type								
Optimise opportunities to return to patterns and processes of natural flooding cycles	?	●	●	♦	?	●	♦	●
Conserve, enhance and restore linear tree belts along hedge and ditch lines and along the banks of watercourses	?	●	●	♦	?	♦	♦	●
In the *Principal Village Farmlands* landscape type and *Village Farmlands with Orchards* landscape type								
Facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create wetland habitats	?	●	●	●	?	♦	♦	♦
Conserve, enhance and restore lines of hedgerow fruit trees that define the planned medium to large scale field patterns	?	●	●	♦	?	?	♦	♦

Optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements

5.38 Wetland habitats are nationally scarce and opportunities to restore or create them should be optimised. In areas where property would not be at risk, wetland creation could contribute to reinstating more natural fluvial-floodplain processes, deliver biodiversity benefits, flood betterment and contribute to climate change resilience.

5.39 Wet grassland creation should be considered as a high priority in the **Avon and Carrant Brook Strategic Corridor**, complemented by other wetland features such as fen, marsh, reed beds and open water. The creation of wetland habitats on individual sites will largely be dependent on the local hydrology and any seasonal changes. Any water bodies should be designed to have serpentine and sinuous edges with significant shallow areas. Broad drawdown zones would encourage marginal habitats including fen, marsh and reed bed to establish.

5.40 Wet grassland habitats would contribute positively to the *Riverside Meadows* landscape type which is characterised by meandering, tree-lined rivers, flanked by alluvial meadows and would help to deliver the aims of the *Severn and Avon Vales Biodiversity Delivery Area*. The quality of agricultural land in the *Riverside Meadows* landscape type is generally low. Opportunities to incorporate appropriate grazing practices and haymaking into the management of sites could contribute to the long-term economic viability of the land and deliver outcomes that ensure net biodiversity gain in the long term. However, after-use in these areas need not be restricted to agriculture and other proposals for the long-term management of habitats will be welcomed.

5.41 In the *village farmlands* landscape types,[42] which have a predominantly arable land use, wetland habitats could be incorporated as wet field margins, ponds, pools and scrapes which would provide valuable habitats and natural water storage. In some cases, particularly where agricultural land quality is lower, the creation of more extensive wetland habitats might be more appropriate.

5.42 The design of wetland habitats should consider the landscape character, retaining the medium to large scale field patterns and opportunities to enhance the landscape and biodiversity benefits of the ditches and watercourses.

5.43 The technical assessment accompanying the planning application will be expected to consider the creation of these habitats throughout the life of the site, including features such as ponds, scrapes and ditches that are of significant conservation importance and could be delivered during working phases as well as on the restored site. The site design, levels and phasing of workings should optimise opportunities for these habitats. All assessments should take account of local considerations and be proportionate to the potential for wetland habitat creation on the site. *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[43] provides useful information about the types of wetland habitats that might be appropriate and how these can be created and managed. The *Worcestershire Habitat Inventory*[44] should be referred to when considering the opportunities to link and buffer existing habitats.

Improve the network of public access routes

5.44 The network of public access routes in the **Avon and Carrant Brook Corridor** is less dense than in other areas of the county and improvements to these networks should be considered. The technical assessment accompanying the planning application will be expected to demonstrate how the proposed development will optimise opportunities to link or extend public rights of way and other public access routes, including long-distance recreation routes or planned and proposed Sustrans routes.

In the *Riverside Meadows* landscape type: Optimise opportunities to return to patterns and processes of natural flooding cycles

5.45 The *Riverside Meadows* landscape type is in flood zone 2 and 3 of the River Avon. Opportunities to restore sustainable natural storage of floodwater on undeveloped floodplains in the **Avon and Carrant Brook Corridor** will be encouraged.[45]

42 *Principal Village Farmlands* and *Village Farmlands with Orchards.*
43 Worcestershire County Council (2013) *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites* available at www.worcestershire.gov.uk/mineralsbackground.
44 See Worcestershire Habitat Inventory information at http://www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.
45 River Severn Catchment Flood Management Plan.

5.46 The return to natural patterns and processes of flooding will not be compatible with all land uses, but could deliver multifunctional benefits if proposed alongside wet grassland habitats or pasture. In some cases, a standoff will be required between the mineral working and any watercourses, but in areas where it is demonstrated to be safe and appropriate to do so, there may be opportunities for banks to be worked. This would provide opportunities to maximise resource efficiency, create a more natural river profile, link to wetland habitats, restore links to natural floodplains and create braided channels and in-channel features.

5.47 The technical assessment accompanying the planning application will be expected to consider the likely impacts on flood risk, both positive and negative, throughout the lifetime of the development (**Policy MLP 22: Water Environment**) and the opportunities for multifunctional benefits including net-biodiversity gain and enhancement of the water environment.

In the *Riverside Meadows* landscape type: Conserve, enhance and restore linear tree belts along hedge and ditch lines and along the banks of watercourses

5.48 Linear tree belts along ditches, watercourses and in hedgerows are key characteristics of the *Riverside Meadows* landscape type, which is comprised of large to medium sized fields with ditch and hedge boundaries. The conservation and restoration of hedgerows will contribute to the structure of the landscape and the local distinctiveness of the area and provide habitat functionality.

5.49 The enhancement of hedgelines that contribute to the secluded pastoral landscape and continuous tree cover along watercourses will be encouraged. Adjoining ditches containing marsh vegetation can link habitats and provide important additional out of channel habitat for fish and amphibians. They are a characteristic feature of Worcestershire's floodplains that support a significant proportion of Worcestershire's swamp habitat.

5.50 The technical assessment accompanying the planning application will be expected to consider these features and habitats and demonstrate how the proposed development will conserve, enhance and restore them across all phases of the site's life. Consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

5.51 The conservation and enhancement of primary hedgerow patterns will help to protect long-distance views from the Cotswolds Area of Outstanding Natural Beauty, and the special characteristics of the Area of Outstanding Natural Beauty and its setting should be considered as appropriate.

In the *Principal Village Farmlands* landscape type and *Village Farmlands with Orchards* landscape type: Facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create wetland habitats

5.52 In the *Principal Village Farmlands* and *Village Farmlands with Orchards* there are large areas of Best and Most Versatile Agricultural Land.[46] Intensive farming for cash crops and horticulture is typical and plays an important role in the local economy. Where restoration to agriculture is proposed, arable land-uses can contribute positively to the character and local distinctiveness of the landscape and can contribute to net biodiversity gain and benefits to the water environment by integrating wetland habitats or including wide field margins and ditch networks.

5.53 Conserving and restoring traditional orchards will be encouraged in the *Village Farmlands with Orchards* landscape type and around villages where it forms part of their local distinctiveness. However it is more appropriate to consider this on a site-by-site basis than on a corridor scale. Where orchards are appropriate there should be an emphasis on the fruit type and varieties associated with the specific locality of the proposal.

5.54 In some cases, particularly where agricultural land quality is lower, the creation of more extensive wetland habitats might be more appropriate.

5.55 The technical assessment accompanying the planning application is expected to include details of the site's agricultural land quality and how any high quality soils will be safeguarded, in line with **Policy MLP 20: Agriculture and soils**.

46 Best and Most Versatile Agricultural Land is defined in the National Planning Policy Framework and shown on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

Traditional orchard in the Vale of Evesham

In the *Principal Village Farmlands* landscape type and *Village Farmlands with Orchards* landscape type: Conserve, enhance and restore lines of hedgerow fruit trees that define the planned medium to large scale field patterns

5.56 Large fields and intensively cultivated land is characteristic of the *Principal Village Farmlands* and *Village Farmlands with Orchards* landscape types. Lines of hedgerow fruit trees, particularly damson, are a distinctive local feature, with some scattered tree cover along watercourses. Oak is also typical as a substitute for the formerly dominant elm. The field boundaries often follow watercourses and drainage ditches, opportunities for net biodiversity gain in these areas should be fully explored and the creation of wide field margins will be encouraged.

5.57 The technical assessment accompanying the planning application will be expected to consider these features and habitats and demonstrate how the proposed development will conserve, enhance and restore them across all phases of the site's life. Consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

5.58 The conservation and enhancement of primary hedgerow patterns will help to protect long-distance views from the Cotswolds Area of Outstanding Natural Beauty and the special characteristics of the Area of Outstanding Natural Beauty and its setting should be considered as appropriate.

Lower Severn Strategic Corridor

5.59 The **Lower Severn Strategic Corridor** is identified in the **Key Diagram** in **Chapter 4** and shown in detail in **Figure 5.2**. It contains 15%[47] of the county's key and significant terrace and glacial sand and gravel resources and is underlain by 5%[48] of the county's Mercia Mudstone clay resource.[49]

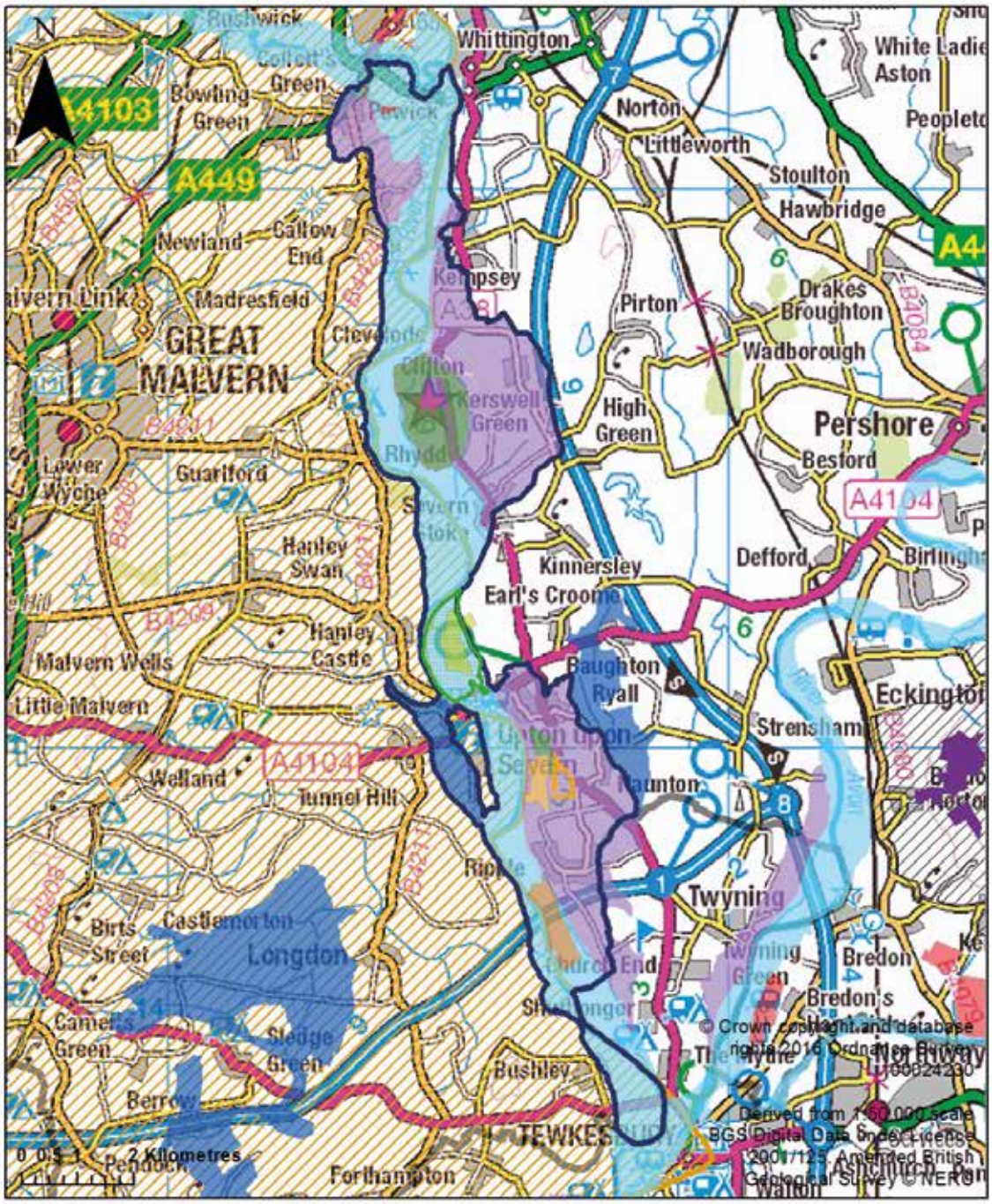
5.60 There are five current workings at various operational stages,[50] three **specific sites**[51] and one **preferred area**[52] in the **Lower Severn Strategic Corridor**.

5.61 The **Lower Severn Strategic Corridor** is focused around the River Severn riverine landscapes, namely the *Riverside Meadows* landscape type, *Settled Farmlands on River Terrace* landscape type and *Wet Pasture Meadows* landscape type where it is adjacent to the *Riverside Meadows* landscape type. These landscape types continue south into Gloucestershire. Flooding issues and the prevalence of riverside habitats including wetlands and grassland areas are unifying features in this corridor.

5.62 Much of the western boundary of the corridor follows the boundary of the *Severn and Avon Vales Biodiversity Delivery Area* and the extent of Flood Zone 2. The northern boundary of the corridor is defined by the boundary of the *River Severn Catchment Flood Management Plan* sub-area "Lower Severn Corridor and Leadon Vale" which mirrors the Water Framework Directive "Severn Vale" catchment. This boundary separates the strategic corridor from the settlement of Worcester.

47 By area.
48 By area.
49 For further information, see *Analysis of Mineral Resources in Worcestershire (2016)* available from www.worcestershire.gov.uk/mineralsbackground.
50 As of November 2016: Clifton Quarry (active), Ryall House Farm Quarry (active), Ryall's Court Farm (permitted, not commenced), Saxons Lode (undergoing restoration) and Ripple Quarry (restored, in aftercare). These are shown on Figure 5.2 and can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
51 Specific sites in the Lower Severn Strategic Corridor: Clifton East, Clifton South, Land at Ryall North.
52 Preferred area in the Lower Severn Strategic Corridor: Ryall East.

Figure 5.2 Lower Severn Strategic Corridor



Legend

- Lower Severn Strategic Corridor
- **Allocated Sites**
  - Specific Site
  - Preferred Area
- **Landscape Character Types**
  - Riverside Meadows
  - Settled Farmlands on River Terrace
  - Wet Pasture Meadows
- **Mineral Sites**
- **Status**
  - Active
  - Permitted (not commenced)
  - Undergoing restoration
  - Restored - in aftercare
  - Restored (closed)
- Area of Outstanding Natural Beauty
- Geopark
- Recreation Opportunity Areas
- special area of conservation

Policy MLP 3: Lower Severn Strategic Corridor

Contributing to:

Objective 1 Objective 3 Objective 4 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted for mineral development within the **Lower Severn Strategic Corridor** that contributes towards the quality, character and distinctiveness of the corridor through the delivery and enhancement of high quality green infrastructure networks.

The priorities for the **Lower Severn Strategic Corridor** are to:

- optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements;
- conserve, enhance and restore linear tree belts along hedge and ditch lines and along the banks of watercourses;
- optimise opportunities for the creation of sub-regional scale accessible semi natural green space taking account of long-term management of the site and the impacts of long-term use for public access;
- optimise opportunities to improve legibility and understanding of geodiversity, particularly in the Abberley and Malvern Hills Geopark, retaining geological and geomorphological features and creating public access where appropriate;
- in the *Riverside Meadows* and *Wet Pasture Meadows* landscape types, optimise opportunities to return to patterns and processes of natural flooding cycles;
- in the *Settled Farmlands on River Terrace* landscape type, facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create wetland habitats.

A level of technical study appropriate to the development proposed will be required to demonstrate how the landscape-scale priorities for the corridor and site-specific considerations have informed the development proposals.

Reasoned justification

5.63 **Policy MLP 3** outlines the strategic framework for the delivery of multifunctional green infrastructure in the **Lower Severn Strategic Corridor**. The priorities for the corridor will contribute to each of the green infrastructure components and climate change adaptation and mitigation as outlined in **Table 5.2**. These are likely to be delivered through the combination of development of multiple sites, as well as through amended planning permissions at existing sites as opportunities arise.

5.64 The corridor priorities can be integrated and delivered alongside each other. In some cases it may not be possible or desirable to deliver all priorities on a single site. The size of the site and other local factors should be taken into account to ensure the site design, and the priorities it contributes towards, are the most appropriate for that location. Where focusing on fewer priorities would deliver greater overall benefits than trying to deliver against all of the priorities for the corridor this will be supported.

Table 5.2. Contribution of Lower Severn Strategic Corridor priorities to green infrastructure and climate change resilience and mitigation

	GI Functions							
Key ● = strong positive contribution ♦ = potential positive contribution ? = unclear X = likely conflict	Access and recreation (policy MLP 17)	Biodiversity (policy MLP 18)	Landscape character and local distinctiveness (policy MLP 19)	Agriculture (policy MLP 20)	Geodiversity (policy MLP 21)	Water environment (policy MLP 22)	Historic Environment (policy MLP 23)	Climate change resilience and mitigation (policy MLP 15)
Across the whole strategic corridor								
Optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements	?	●	●	♦	?	●	♦	●
Conserve, enhance and restore linear tree belts along hedge and ditch lines and along the banks of watercourses	?	●	●	♦	?	●	♦	●
Optimise opportunities for the creation of sub-regional scale accessible semi natural green space taking account of long term management of the site and the impacts of long term use for public access	●	♦	♦	X	♦	♦	♦	?
Optimise opportunities to improve legibility and understanding of geodiversity, particularly in the Abberley and Malvern Hills Geopark, retaining geological and geomorphological features and creating public access where appropriate	●	?	●	?	●	?	♦	?
In the *Riverside Meadows* and *Wet Pasture* landscape types								
Optimise opportunities to return to patterns and processes of natural flooding cycles	?	●	●	♦	?	●	♦	●
In the *Settled Farmlands on River Terrace* landscape type								
Facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create wetland habitats	?	●	●	●	?	♦	♦	♦

Optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements

5.65 Wetland habitats are nationally scarce and opportunities to restore or create them should be optimised. In areas where property would not be at risk, wetland creation could contribute to reinstating more natural fluvial-floodplain processes, deliver biodiversity benefits, flood betterment and contribute to climate change resilience.

5.66 Wet grassland creation should be considered as a high priority in the **Lower Severn Strategic Corridor**, complemented by other wetland features such as fen, marsh, reed beds and open water. The creation of wetland habitats on individual sites will largely be dependent on the local hydrology and any seasonal changes. Any water bodies should be designed to have serpentine and sinuous edges with significant shallow areas. Broad drawdown zones would encourage marginal habitats including fen, marsh and reed bed to establish.

5.67 The *Wet Pasture Meadows* landscape type is ideally suited to this habitat type, typically being a flat, low-lying, largely uninhabited landscape associated with irregularly shaped, poorly draining basins fringed by low hills or scarps. Wet grassland habitats would also contribute positively to the *Riverside Meadows* landscape type which is characterised by meandering, tree-lined rivers, flanked by alluvial meadows and would help to deliver the aims of the *Severn and Avon Vales Biodiversity Delivery Area*. The quality of agricultural land in the *Wet Pasture Meadows* and *Riverside Meadows* landscape types is generally low. Opportunities to incorporate appropriate grazing practices and haymaking into the management of sites could contribute to the long-term economic viability of the land and deliver outcomes that ensure net biodiversity gain in the long-term. However, after-use in these areas need not be restricted to agriculture and other proposals for the long-term management of habitats will be welcomed.

5.68 In the *Settled Farmlands on River Terrace* landscape type which is predominantly farmed for cash crops and horticulture, wetland habitats could be incorporated as wet field margins, ponds, pools and scrapes which would provide valuable habitats and natural water storage. In some cases, particularly where agricultural land quality is lower, the creation of more extensive wetland habitats might be more appropriate.

5.69 The design of wetland habitats should consider the landscape character,[53] retaining the medium to large scale field patterns and opportunities to enhance the landscape and biodiversity benefits of the ditches and watercourses.

5.70 The technical assessment accompanying the planning application will be expected to consider the creation of these habitats throughout the life of the site, including features such as ponds, scrapes and ditches that are of significant conservation importance and could be delivered during working phases as well as on the restored site. The site design, levels and phasing of workings should optimise opportunities for these habitats. All assessments should take account of local considerations and be proportionate to the potential for wetland habitat creation on the site. *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[54] provides useful information about the types of wetland habitats that might be appropriate and how these can be created and managed. The *Worcestershire Habitat Inventory*[55] should be referred to when considering the opportunities to link and buffer existing habitats.

Conserve, enhance and restore linear tree belts along hedge and ditch lines and along the banks of watercourses

5.71 Linear tree belts along ditches, watercourses and in hedgerows are key characteristics of the *Riverside Meadows, Wet Pasture Meadows* and *Settled Farmlands on River Terrace* landscape types, all of which are comprised of large to medium sized fields with ditch and hedge boundaries.

5.72 In the *Riverside Meadows* landscape type, the conservation and enhancement of hedgelines that contribute to the secluded pastoral landscape and continuous tree cover along watercourses

53 Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance* available at www.worcestershire.gov.uk/lca.
54 Worcestershire County Council (2013) *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites* available at www.worcestershire.gov.uk/mineralsbackground.
55 See Worcestershire Habitat Inventory information at http://www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.

Wet grassland

will be encouraged. *Wet Pasture Meadows* are also characterised by tree patterns along linear features and a regular pattern of hedged fields and ditches fringed by lines of willow and alder. Opportunities to introduce new tree planting in this landscape type should respect the inherent linear patterns of tree cover along these features, whereas in the *Settled Farmlands on River Terrace* landscape type it should respect the sub-regular field patterns. The conservation and restoration of hedgerows will contribute to the structure of the landscape and the local distinctiveness of the area and provide habitat functionality.

5.73 Adjoining ditches containing marsh vegetation can link habitats and provide important additional out of channel habitat for fish and amphibians. They are a characteristic feature of Worcestershire's floodplains that support a significant proportion of Worcestershire's swamp habitat.

5.74 The technical assessment accompanying the planning application will be expected to consider these features and habitats and demonstrate how the proposed development will conserve, enhance and restore them across all phases of the site's life. Consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

5.75 The conservation and enhancement of primary hedgerow patterns will help to protect long-distance views from the Cotswolds and the Malvern Hills Areas of Outstanding Natural Beauty, and the special characteristics of the Areas of Outstanding Natural Beauty and their settings should be considered as appropriate.

Optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long-term management of the site and the impacts of long-term use for public access

5.76 There is an identified need for a strategic recreation asset in the **Lower Severn Strategic Corridor**[56] to provide an alternative destination for visitors to the Malvern Hills and to serve the new developments that are planned for the south of Worcester and the north of Great Malvern. This provision of a strategic recreation asset would require a site of over 100ha. This could be from a single site, but opportunities may exist for the coordinated restoration of smaller sites to be delivered in combination to facilitate the provision of a sub-regional scale asset.

56 The need for a strategic recreation asset is identified in the adopted *South Worcestershire Development Plan 2016* (http://www.swdevelopmentplan.org/) and the *Worcestershire Green Infrastructure Framework* (Document 3, www.worcestershire.gov.uk/GI). This is based on the access to, and capacity of, existing recreation assets and the impacts of planned housing growth. The *South Worcestershire Development Plan* identifies an area of search for a strategic recreation asset, known as "Clifton Water Park", at the old gravel pits around Sandford, south of Kempsey. However the provision of strategic recreation assets is not necessarily limited to the Clifton Water Park site.

Typical Riverside Meadows landscape, Ham Bridge, Worcestershire

5.77 The creation of a recreation asset and any associated built development, such as to provide visitor facilities, would require separate planning permission from the relevant Local Planning Authority. However, minerals development in this area will be expected to fully consider the opportunities the site could offer when designing the site's working and restoration schemes. This could include the topography and landform of the site, enhancing biodiversity and geodiversity in order to create a visitor experience that is distinctive and attractive enough to take pressure away from the Malvern Hills. It could integrate wetland habitats, and phasing of working and restoration to enable a recreation facility to be developed safely as early as possible in the site's life.

5.78 The technical assessment accompanying the planning application will be expected to demonstrate that opportunities for the creation of sub-regional scale accessible semi-natural green space have been fully considered, taking account of the need for long-term management of the site and the impacts of long-term use for public access. Consideration of these opportunities is expected to be integral to the design and layout of the site and any restoration proposals.

Optimise opportunities to improve legibility and understanding of geodiversity, particularly in the Abberley and Malvern Hills Geopark, retaining geological and geomorphological features and creating public access where appropriate

5.79 The southern part of the **Lower Severn Strategic Corridor** is within the Abberley and Malvern Hills Geopark[57] and there is a cluster of geological Sites of Special Scientific Interest and Local Geological Sites close to the village of Clifton. The retention and exposure of geological features could enhance the locally distinctive character of these areas, scientific and public understanding of the geology of the landscape and enhance the visitor appeal of the Geopark.

5.80 Although it is not always possible to predict where features of geological interest will be exposed before working a site, mineral operators should remain mindful of any opportunities to retain or record features of geological interest if they are discovered on the site. Consideration should be given to providing local communities and interested parties with information about the geology of the site, outlining any interesting features, the ways in which the geology has influenced the landscape and the relationship with the geology of the wider area. This might be through information boards at the site entrance, alongside rights of way or in other locally appropriate locations, or by enabling public access to geological exposures during working or restoration where it is safe to do so.

5.81 The technical assessment accompanying the planning application will be expected to demonstrate how the proposed development will improve the legibility and understanding of the geodiversity of the area, particularly where sites are in the Geopark, and to consider opportunities to retain geological and geomorphological features where they contribute to the unity and structure of the landscape.

In the *Riverside Meadows* and *Wet Pasture Meadows* landscape types: Optimise opportunities to return to patterns and processes of natural flooding cycles

5.82 The **Lower Severn Strategic Corridor** is an area where the Environment Agency is generally seeking to reduce existing flood risk management actions where this will not create unacceptable risk.[58] The return to natural patterns and processes of

57 More information about the Abberley and Malvern Hills Geopark is available at http://geopark.org.uk/
58 River Severn Catchment Flood Management Plan.

flooding will not be compatible with all land uses, but could deliver multifunctional benefits when proposed alongside wet grassland habitats or pasture. The *Riverside Meadows* and *Wet Pasture Meadows* landscape types are in floodzone 2 and 3 of the River Severn and offer the greatest opportunities to maximise these benefits.

5.83 In some cases, a standoff will be required between the mineral working and any watercourses, but in areas where it is demonstrated to be safe and appropriate to do so, there may be opportunities for banks to be worked. This would provide opportunities to maximise resource efficiency, create a more natural river profile, link to wetland habitats, restore links to natural floodplains and create braided channels and in-channel features.

5.84 The technical assessment accompanying the planning application will be expected to consider the likely impacts on flood risk, both positive and negative, throughout the lifetime of the development (**Policy MLP 22: Water Environment**) and the opportunities for multifunctional benefits including net-biodiversity gain and enhancement of the water environment.

In the *Settled Farmlands on River Terrace* landscape type: Facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create wetland habitats

5.85 In the *Settled Farmlands on River Terrace* landscape type there are large areas of Best and Most Versatile Agricultural Land.[59] Intensive farming for cash crops and horticulture is typical and plays an important role in the local economy. Where restoration to agriculture is proposed, arable land-uses can contribute positively to the character and local distinctiveness of the landscape and can contribute to net biodiversity gain and benefits to the water environment by integrating wetland habitats or including wide field margins and ditch networks.

5.86 In some cases, particularly where agricultural land quality is lower, the creation of more extensive wetland habitats might be more appropriate.

5.87 The technical assessment accompanying the planning application is expected to include details of the site's agricultural land quality and how any high quality soils will safeguarded, in line with **Policy MLP 20: Agriculture and Soils**.

North East Worcestershire Strategic Corridor

5.88 The **North East Worcestershire Strategic Corridor** is identified in the **Key Diagram** in **Chapter 4** and shown in detail in **Figure 5.3**. It contains 4%[60] of the county's key and significant terrace and glacial sand and gravel resources, 24% of the county's key and significant solid sand resource (including 20%[61] of the Wildmoor Formation which contains silica sand resources), and 1%[62] of the county's known former building stone quarries.[63]

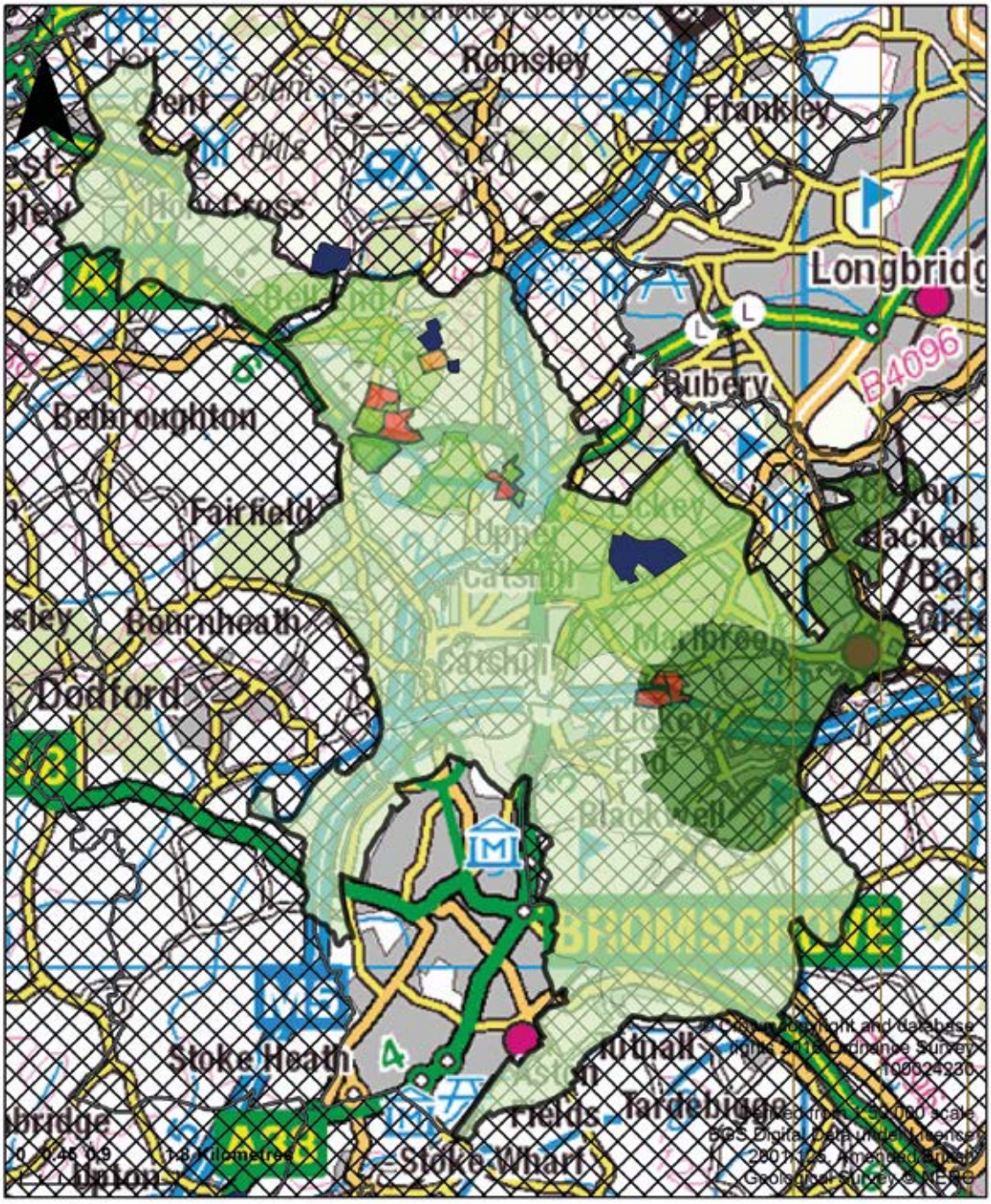
5.89 There are four current workings at various operational stages[64] and several historic workings[65] but there are no **specific sites** or **preferred areas** in the **North East Strategic Corridor**.

5.90 The **North East Worcestershire Strategic Corridor** encompasses the *Principal Settled Farmlands* landscape type, *Settled Farmlands with Pastoral Land Use* landscape type and *Enclosed Commons* landscape type. *The Settled Farmlands with Pastoral Land Use* landscape type shares many characteristics of the *Principal Settled Farmlands* landscape type and the *Enclosed Commons* form features within these.

Typical Principal Settled Farmlands in Worcestershire

59 Best and Most Versatile Agricultural Land is defined in the National Planning Policy Framework and shown on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
60 By area.
61 By area.
62 2 out of 161 quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone* up to March 2016. See http://www.buildingstones.org.uk.
63 For further information, see *Analysis of Mineral Resources in Worcestershire (2016)* available from www.worcestershire.gov.uk/mineralsbackground.
64 As of November 2016: Wildmoor Quarry (active), Stanley Evans Quarry Sandy Lane (inactive), Chadwick Mill Farm (known as Pinches 3 Quarry) (inactive), Chadwich Lane Quarry (restored, in aftercare). These are shown on Figure 5.3 and can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
65 Madley Heath (restored, closed), Sandy Lane (restored, closed), Pinches 1 and 2 (restored, closed), Shepley Quarry (restored, closed) and several other sites known to have been worked which have been digitised but for which no information is available. These are shown on Figure 5.3 and can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

Figure 5.3 North East Worcestershire Strategic Corridor



Policy MLP 4: North East Worcestershire Strategic Corridor

Contributing to:

Objective 1 Objective 3 Objective 4 Objective 5 Objective 6 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted for mineral development within the **North East Worcestershire Strategic Corridor** that contributes towards the quality, character and distinctiveness of the corridor through the delivery and enhancement of high quality green infrastructure networks.

The priorities for the **North East Worcestershire Strategic Corridor** are to:

- optimise opportunities to conserve, enhance and create lowland acid grassland habitats, particularly where there are opportunities to buffer and connect existing habitats;
- optimise opportunities to conserve all remaining areas of permanent pasture across the corridor and to create permanent pasture in the *Enclosed Commons* landscape type and *Settled Farmlands with Pastoral Land Use* landscape type;
- conserve, enhance and restore characteristic hedgerow and tree cover patterns of the component landscape types;
- optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long term management of the site and the impacts of long term use for public access.

A level of technical study appropriate to the proposed development will be required to demonstrate how the landscape-scale priorities for the corridor and any site-specific considerations have informed the development proposals.

Reasoned justification

5.91 **Policy MLP 4** outlines the strategic framework for the delivery of multifunctional green infrastructure in the **North East Worcestershire Strategic Corridor**. The priorities for the corridor will contribute to each of the green infrastructure components and climate change adaptation and mitigation as outlined in **Table 5.3**. These are likely to be delivered through the combination of development of multiple sites, as well as through amended planning permissions at existing sites as opportunities arise.

5.92 The corridor priorities can be integrated and delivered alongside each other. In some cases it may not be possible or desirable to deliver all priorities on a single site. The size of the site and other local factors should be taken into account to ensure the site design, and the priorities it contributes towards, are the most appropriate for that location. Where focusing on fewer priorities would deliver greater overall benefits than trying to deliver against all of the priorities for the corridor this will be supported.

Acid grassland habitat

Table 5.3. Contribution of North East Worcestershire Strategic Corridor priorities to green infrastructure and climate change resilience and mitigation

	GI Functions							
Key ● = strong positive contribution ♦ = potential positive contribution ? = unclear X = likely conflict	Access and recreation (policy MLP 17)	Biodiversity (policy MLP 18)	Landscape character and local distinctiveness (policy MLP 19)	Agriculture (policy MLP 20)	Geodiversity (policy MLP 21)	Water environment (policy MLP 22)	Historic Environment (policy MLP 23)	Climate change resilience and mitigation (policy MLP 15)
Across the whole strategic corridor								
Optimise opportunities to conserve, enhance and create lowland acid grassland habitats, particularly where there are opportunities to buffer and connect existing habitats	?	●	●	♦	?	♦	♦	●
Optimise opportunities to conserve all remaining areas of permanent pasture across the corridor and to create permanent pasture in the *Enclosed Commons* landscape type and *Settled Farmlands with Pastoral Land Use* landscape type	?	●	●	●	?	♦	♦	♦
Conserve, enhance and restore characteristic hedgerow and tree cover patterns of the component landscape types	?	●	●	♦	?	♦	♦	●
Optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long-term management of the site and the impacts of long-term use for public access	●	♦	♦	X	♦	♦	♦	?

Optimise opportunities to conserve, enhance and create lowland acid grassland habitats, particularly where there are opportunities to buffer and connect existing habitats

5.93 Lowland acid grassland habitats are scarce in Worcestershire and are sparsely distributed in the **North East Worcestershire Strategic Corridor** despite being well suited to the underlying sandstone geology. Opportunities to conserve, enhance or create these high conservation value *Biodiversity Action Plan* priority habitats should be optimised.

5.94 Exposed sandy soils at mineral sites provided ideal conditions for acid grassland habitats. Acid grasslands mostly occur on marginal areas such as scree slopes, cliffs and areas of exposed bare sand within aggregate sites. Acid grassland habitats can develop naturally on bunds and mounds and other areas of exposed sandy soils giving opportunities to deliver biodiversity benefits throughout the life of the site. Managing phased extraction with set-aside for wildlife can make a significant difference to biodiversity in this area.

5.95 Opportunities to incorporate appropriate grazing practices and haymaking into the management of sites could contribute to the long-term economic viability of the land and deliver outcomes that ensure net biodiversity gain in the long term. However after-use in these areas need not be restricted to agriculture and other proposals for the long-term management of habitats will be welcomed. Where the restoration is to agriculture or recreation, there are opportunities to retain low nutrient soils and create acid grassland in more marginal areas such as along field boundaries. Larger areas of acid grassland could be created in keeping with locally characteristic field patterns.

5.96 The technical assessment accompanying the planning application will be expected to consider the creation of these habitats during working phases as well as on the restored site. The site design and phasing of workings should optimise opportunities for these habitats and soil management should ensure the retention of low nutrient sandy soils for the creation of acid grassland. All assessments should take account of local considerations and be proportionate to the potential for acid grassland creation on the site. *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[66] provides useful information about the creation and management of acid grassland habitats at mineral sites.

5.97 The *Worcestershire Habitat Inventory*[67] should be referred to when considering the opportunities to link and buffer existing habitats. This should look beyond the boundaries of both the individual site and the **North East Worcestershire Strategic Corridor** to consider the opportunities to contribute towards the wider network of acid grasslands found to the east and west of the strategic corridor in the *Wooded Hills and Farmlands* landscape type (east) and *Principal Timbered Farmlands* landscape (west).

Optimise opportunities to conserve all remaining areas of permanent pasture across the corridor and to create permanent pasture in the *Enclosed Commons* landscape type and *Settled Farmlands with Pastoral Land Use* landscape type

5.98 Mixed agricultural land use is typical in the *Principal Settled Farmlands* landscape type where there is a high concentration of Best and Most Versatile Agricultural Land.[68]

5.99 Pasture is the dominant land use in the *Settled Farmlands with Pastoral Land Use* landscape type and the *Enclosed Commons* landscape type. Within these landscapes there has been an increase in arable cultivation, weakening landscape character and meaning that the remaining areas of permanent pasture can offer significant biodiversity benefits.

5.100 Permanent pasture offers opportunities to deliver acid grassland habitats where there are areas of appropriate soils and geology. Where acid grassland is not appropriate neutral grassland is encouraged to deliver biodiversity benefits, and these habitats are best delivered on poor quality soils. Large areas of pasture could strengthen the distinctive character of the *Settled Farmlands with Pastoral Land Use* and *Enclosed Commons* landscape types, particularly where they enable a return to the scale and enclosure pattern typical of those landscapes.

5.101 Permanent pasture would also be appropriate in the *Principal Settled Farmlands landscape type* dependant on the agricultural land value, geology and potential to safeguard high quality soils.

5.102 The technical assessment accompanying the planning application will be expected to consider the conservation and creation of permanent pasture, taking account of local considerations. This should demonstrate how the site design and phasing of workings and long term management proposals will optimise opportunities for the conservation and creation of permanent pasture and how it will contribute to landscape character and habitat networks.

Conserve, enhance and restore characteristic hedgerow and tree cover patterns of the component landscape types

5.103 The pattern of small to medium sized hedged fields which is typical of the landscape types within the **North East Worcestershire Strategic Corridor** is vulnerable to change as the tendency towards arable dominance reduces the functional worth of hedgerow boundaries. Hedgerow loss and deterioration is already in evidence, with corresponding dilution of the essential scale of these landscapes.

66 Worcestershire County Council (2013) *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites* available at www.worcestershire.gov.uk/minerals.

67 See Worcestershire Habitat Inventory information at http://www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.

68 Best and Most Versatile Agricultural Land is defined in the National Planning Policy Framework and shown on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

5.104 Each of the component landscape types in the **North East Worcestershire Strategic Corridor** has its own characteristics, and development proposals will be expected to respect these:

- In the *Settled Farmlands with Pastoral Land Use* landscape type, hedgerow trees are particularly important, together with linear tree cover associated with watercourses. These existing patterns of tree cover should be conserved, and opportunities for new tree planting should be focused on strengthening and restoring hedgerow tree populations and the tree cover associated with watercourses.
- In the *Principal Settled Farmlands* landscape type, tree cover is most notable along stream sides, with only scattered tree cover along hedgerows. Groups of trees and orchards are often associated with settlements. Opportunities for new tree planting are best concentrated along watercourses, strengthening the linear pattern of these features. Additional tree cover in the vicinity of farmsteads and other settlements is encouraged in order to emphasise the pattern of tree cover in domestic settings in this landscape type.
- Hedgerow tree planting is not encouraged in the *Enclosed Commons* landscape. Instead, priority should be given to restoring the primary hedgerow network as detailed in the *Landscape Character Assessment*.[69]

5.105 English Elm, Hawthorn, Blackthorn and Damson are the principal component hedgerow tree species in the **North East Worcestershire Strategic Corridor**. Holly can also be found locally and local varieties of fruit trees could be appropriate in the *Forest of Feckenham Biodiversity Delivery Area*.

5.106 Appropriate habitat creation along watercourses can deliver biodiversity gain as well as strengthen landscape character. Most wetland habitat in these landscapes is located along watercourses as linear strips of tall-herb fen and alder/willow wood. The quality of these watercourses has been affected by poor management, eutrophication, desiccation and falling water tables. The reedswamps and successions communities of Alder woods are often good quality and include rare species and communities.

Typical Enclosed Commons landscape type in Worcestershire

5.107 The technical assessment accompanying the planning application will be expected to consider these features and habitats and demonstrate how the proposed development will conserve, enhance and restore them in keeping with the character and distinctiveness of the relevant landscape type across all phases of the site's life. Consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

Optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long-term management of the site and the impacts of long-term use for public access

5.108 There is an identified need for a strategic recreation asset in or near to the **North East Worcestershire Strategic Corridor**[70] to provide an alternative destination for visitors to the Lickey Hills and Clent Hills. The provision of strategic recreation assets would require a site of over 100ha. This could be from a single site, but opportunities may exist for the coordinated restoration of smaller sites to be delivered in combination to facilitate the provision of a sub-regional scale asset.

69 Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance* available at www.worcestershire.gov.uk/lca.

70 The need for a strategic recreation asset is identified in the *Bromsgrove District Plan Proposed Submission Version 2011-2030* and the *Worcestershire Green Infrastructure Framework* (Document 3, www.worcestershire.gov.uk/GI). This is based on the access to, and capacity of, existing recreation assets and the impacts of planned housing growth. The *Worcestershire Green Infrastructure Strategy* identifies a need to relieve visitor pressure on the Lickey Hills and Clent Hills. The *Worcestershire Green Infrastructure Strategy Framework 3 document* suggests that this could be done through extending the green corridor and publicly-accessible open space east of the Lickey Hills to encompass Upper and Lower Bittell Reservoirs and the Worcester and Birmingham canal, however there are currently no proposals to develop this scheme further.

Acid grassland habitat

5.109 The creation of a recreation asset and any associated built development, such as to provide visitor facilities, would require separate planning permission from the relevant Local Planning Authority. However, minerals development in this area will be expected to fully consider the opportunities the site could offer in designing the site's working and restoration schemes. This could include the topography and landform of the site, enhancing biodiversity and geodiversity in order to create a visitor experience that is distinctive and attractive enough to take pressure away from the Lickey Hills and Clent Hills. It could integrate the provision of acid grassland habitats. Phasing of working and restoration should enable such a recreation facility to be developed safely as early as possible in the site's life.

5.110 The technical assessment accompanying the planning application will be expected to demonstrate that opportunities for the creation of sub-regional scale accessible semi-natural green space have been fully considered, taking account of the need for long-term management of the site and the impacts of long-term use for public access. Consideration of these opportunities is expected to be integral to the design and layout of the site and any restoration proposals.

North West Worcestershire Strategic Corridor

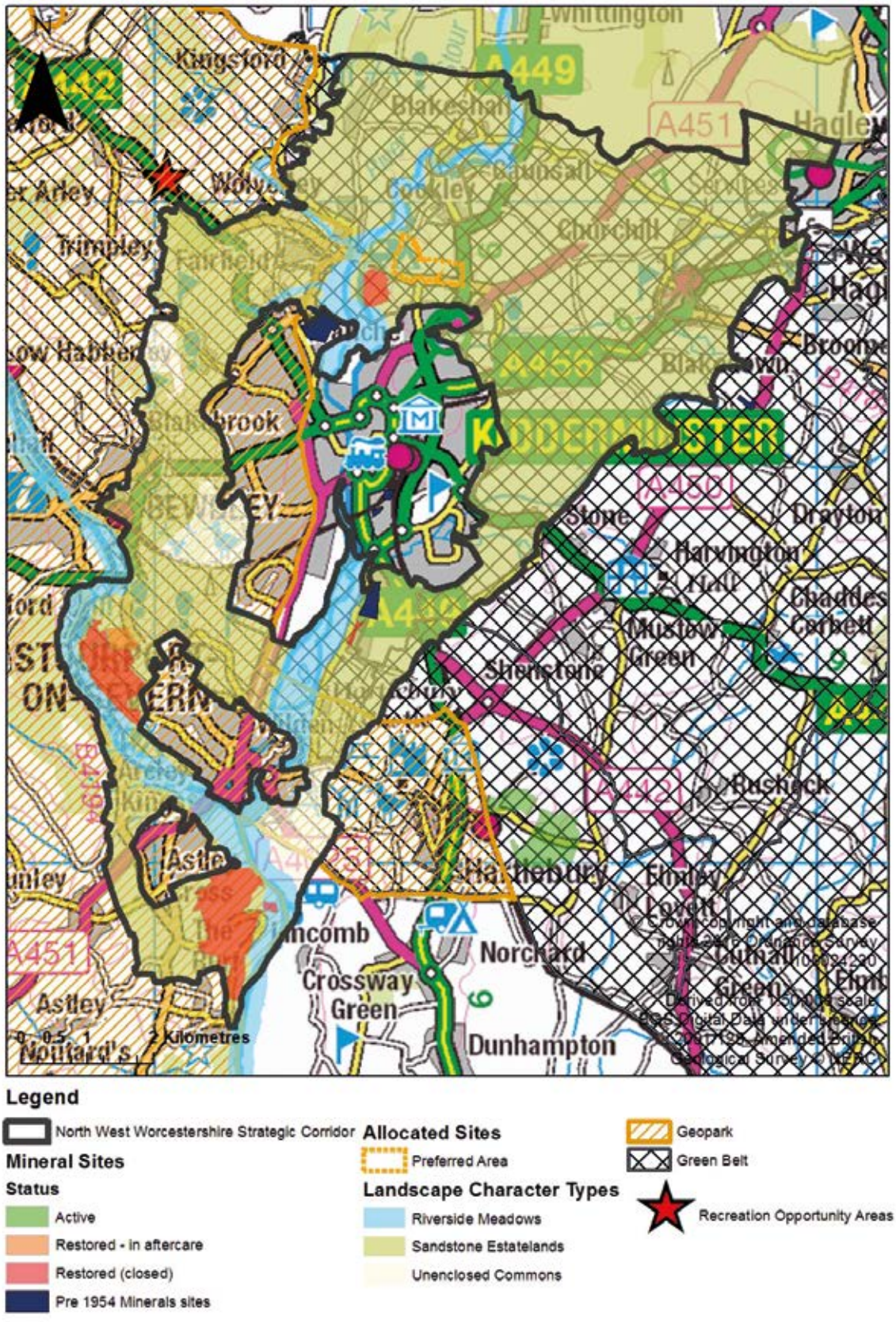
5.111 The **North West Worcestershire Strategic Corridor** is identified in the **Key Diagram** in **Chapter 4** and shown in detail in **Figure 5.4**. It contains 5%[71] of the county's key and significant terrace and glacial sand and gravel resources, 63% of the county's key and significant solid sand resource (including 52%[72] of the Wildmoor Formation which contains silica sand resources) and 2%[73] of the county's known former building stone quarries.[74]

5.112 There is one current working,[75] several historic workings[76] and one **preferred area**[77] in the **North West Worcestershire Strategic Corridor**.

5.113 The **North West Worcestershire Strategic Corridor** encompasses the *Sandstone Estatelands* landscape type around Kidderminster and Stourport, the *Riverside Meadows* landscape type that runs through these areas and the pockets of *Unenclosed Commons* landscape type within them. The area that spans between Kidderminster and Stourport is also defined by the extent of the *Wyre Forest Acid Heathlands Biodiversity Delivery Area*.

71 By area.
72 By area.
73 3 out of 161 quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone* up to March 2016. See http://www.buildingstones.org.uk.
74 For further information, see *Analysis of Mineral Resources in Worcestershire (2016)* available from www.worcestershire.gov.uk/mineralsbackground.
75 As of November 2016: Blackstone Quarry (restored, in aftercare). This is shown on Figure 5.4 and can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
76 Astley Burf (restored, closed), Lick Hill Quarry (restored, closed), Brant Farm Quarry (restored, closed), Stourhill Quarry (restored, closed), Wolverley (restored, closed) and several other sites known to have been worked which have been digitised but for which no information is available. These are shown on Figure 5.4 and can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
77 Preferred area in the North West Worcestershire Strategic Corridor: Land North of Wolverley Road.

Figure 5.4 North West Worcestershire Strategic Corridor



Policy MLP 5: North West Worcestershire Strategic Corridor

Contributing to:

Objective 1 Objective 3 Objective 5 Objective 6 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted for mineral development within the **North West Worcestershire Strategic Corridor** that contributes towards the quality, character and distinctiveness of the corridor through the delivery and enhancement of high quality green infrastructure networks.

The priorities for the **North West Worcestershire Strategic Corridor** are to:

- optimise opportunities to improve legibility and understanding of geodiversity, particularly in the Abberley and Malvern Hills Geopark, retaining geological and geomorphological features and creating public access where appropriate;
- optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long term management of the site and the impacts of long term use for public access;
- in the *Riverside Meadows* landscape type, optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements;
- in the *Sandstone Estatelands* landscape type, optimise opportunities to conserve, enhance and create heathland and acid grassland habitats, particularly where there are opportunities to buffer and connect existing habitats;
- in the *Sandstone Estatelands* landscape type, facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create heathland habitats;
- in the *Riverside Meadows* landscape type and *Sandstone Estatelands* landscape type, conserve, enhance and restore characteristic hedgerow patterns and continuous tree cover along hedgelines, ditches and watercourses;
- in the *Unenclosed Commons* landscape type, conserve and enhance the unenclosed visual distinctiveness of open common areas.

A level of technical study appropriate to the proposed development will be required to demonstrate how the landscape-scale priorities for the corridor and any site-specific considerations have informed the development proposals.

Reasoned justification

5.114 **Policy MLP 5** outlines the strategic framework for the delivery of multifunctional green infrastructure in the **North West Worcestershire Strategic Corridor**. The priorities for the corridor will contribute to each of the green infrastructure components and climate change adaptation and mitigation as outlined in **Table 5.4**. These are likely to be delivered through the combination of development of multiple sites, as well as through amended planning permissions at existing sites as opportunities arise.

5.115 The corridor priorities can be integrated and delivered alongside each other. In some cases it may not be possible or desirable to deliver all priorities on a single site. The size of the site and other local factors should be taken into account to ensure the site design, and the priorities it contributes towards, are the most appropriate for that location. Where focusing on fewer priorities would deliver greater overall benefits than trying to deliver against all of the priorities for the corridor this will be supported.

Table 5.4. Contribution of North West Worcestershire Strategic Corridor priorities to green infrastructure and climate change resilience and mitigation

	GI Functions							
Key ● = strong positive contribution ♦ = potential positive contribution ? = unclear X = likely conflict	Access and recreation (policy MLP 17)	Biodiversity (policy MLP 18)	Landscape character and local distinctiveness (policy MLP 19)	Agriculture (policy MLP 20)	Geodiversity (policy MLP 21)	Water environment (policy MLP 22)	Historic Environment (policy MLP 23)	Climate change resilience and mitigation (policy MLP 15)
Across the whole strategic corridor								
Optimise opportunities to improve legibility and understanding of geodiversity, particularly in the Abberley and Malvern Hills Geopark, retaining geological and geomorphological features and creating public access where appropriate	●	?	●	?	●	?	♦	?
Optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long term management of the site and the impacts of long term use for public access	●	♦	♦	X	♦	♦	♦	?
In the *Riverside Meadows* landscape type								
Optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements	?	●	●	♦	?	●	♦	●
In the *Sandstone Estatelands* landscape type								
Optimise opportunities to conserve, enhance and create heathland and acid grassland habitats, particularly where there are opportunities to buffer and connect existing habitats	?	●	●	♦	?	♦	♦	●
Facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create heathland habitats	?	●	●	●	?	♦	♦	♦
In the *Riverside Meadows* landscape type and the *Sandstone Estatelands* landscape type								
Conserve, enhance and restore characteristic hedgerow patterns and continuous tree cover along hedgelines, ditches and watercourses	?	●	●	♦	?	♦	♦	●
In the *Unenclosed Commons* landscape type								
Conserve and enhance the unenclosed visual distinctiveness of open common areas	?	?	●	♦	?	?	♦	?

Optimise opportunities to improve legibility and understanding of geodiversity, particularly in the Abberley and Malvern Hills Geopark, retaining geological and geomorphological features and creating public access where appropriate

5.116 The southern and western parts of the **North West Worcestershire Strategic Corridor** are in the *Abberley and Malvern Hills Geopark*.[78] The retention and exposure of geological features can enhance the locally distinctive character of this area, scientific and public understanding of the geology of the landscape and enhance the visitor appeal of the Geopark.

5.117 Although it is not always possible to predict where features of geological interest will be exposed before working a site, mineral operators should remain mindful of any opportunities to retain or record features of geological interest if they are discovered on the site. Consideration should be given to providing local communities and interested parties with information about the geology of the site, outlining any interesting features, the ways in which the geology has influenced the landscape and the relationship with the geology of the wider area. This might be through information boards at the site entrance, alongside rights of way or in other locally appropriate locations, or by enabling public access to geological exposures during working or restoration where it is safe to do so.

5.118 The technical assessment accompanying the planning application will be expected to demonstrate how the proposed development will improve the legibility and understanding of the geodiversity of the area, particularly where sites are in the Geopark, and to consider opportunities to retain geological and geomorphological features where they contribute to the unity and structure of the landscape.

Optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long-term management of the site and the impacts of long-term use for public access

5.119 There is an identified need for a strategic recreation asset in the vicinity of the **North West Worcestershire Strategic Corridor** to relieve pressure on the 6 existing sub-regional scale accessible semi-natural green spaces in Wyre Forest District.[79] Part of the **North West Worcestershire Strategic Corridor** to the east of Kidderminster is also further than the recommended 5km distance from any county or sub-regional scale informal recreation asset.

5.120 With the exclusion of the *Unenclosed Commons* landscape type, an informal recreation site could be in keeping with the landscape character, particularly where hedgerow patterns, tree cover and field patterns continue to contribute to the unity and structure of the landscape. The provision of strategic recreation assets would require a site of over 100ha. This could be from a single site, but opportunities may exist for the coordinated restoration of smaller sites to be delivered in combination to facilitate the provision of a sub-regional scale asset.

5.121 The creation of a recreation asset and any associated built development, such as to provide visitor facilities, would require separate planning permission from the relevant Local Planning Authority. However, minerals development in this area will be expected to fully consider the opportunities the site could offer in designing the site's working and restoration schemes. This could include the topography and landform of the site, enhancing biodiversity and geodiversity in order to create visitor experience that is distinctive and attractive enough to take pressure away from the Wyre Forest. It could integrate the provision of heathland and acid grassland habitats. Phasing of working and restoration should enable such a recreation facility to be developed safely as early as possible in the site's life.

5.122 The technical assessment accompanying the planning application will be expected to demonstrate that opportunities for the creation of sub-regional scale accessible semi-natural green space have been fully considered, taking account of the need for long-term management of the site and the impacts of long-term use for public access. Consideration of these opportunities is expected to be integral to the design and layout of the site and any restoration proposals.

78 More information about the Abberley and Malvern Hills Geopark is available at http://geopark.org.uk/.

79 Additional development planned for Wyre Forest District and Birmingham and the Black Country will put increased pressure on the existing sub-regional scale semi-natural green space. This is concerning for those assets that are already at capacity, such as the Wyre Forest and Kingsford Park. Whilst there is potential for some of the existing assets to absorb some of the additional visitor pressure ensuring alternative provision of sub-regional scale accessible natural greenspace for the populations of Birmingham and the Black Country will be key to safeguarding the district's sub-regional assets. As such an opportunity area for an extension to the Wyre Forest has been identified in the Worcestershire Green Infrastructure Strategy. This is a broad area lying just beyond the north western boundary of the corridor.

In the *Riverside Meadows* landscape type: Optimise opportunities to create wetland habitats that contribute positively to the character and distinctiveness of the landscape, deliver net biodiversity gain, flood betterment and water quality improvements

5.123 Wetland habitats are nationally scarce and opportunities to restore or create them should be optimised. In areas where property would not be at risk, wetland creation could contribute to reinstating more natural fluvial-floodplain processes, deliver biodiversity benefits, flood betterment and contribute to climate change resilience.

5.124 Wet grassland creation should be considered as a high priority in the **North West Worcestershire Strategic Corridor**, complemented by other wetland features such as fen, marsh, reed beds and open water. The creation of wetland habitats on individual sites will largely be dependent on the local hydrology and any seasonal changes. Any water bodies should be designed to have serpentine and sinuous edges with significant shallow areas. Broad drawdown zones would encourage marginal habitats including fen, marsh and reed bed to establish.

5.125 Wet grassland habitats would contribute positively to the *Riverside Meadows* landscape type which is characterised by meandering, tree-lined rivers, flanked by alluvial meadows. The quality of agricultural land in the *Riverside Meadows* landscape type is generally low. Opportunities to incorporate appropriate grazing practices and haymaking into the management of sites could contribute to the longterm economic viability of the land and deliver outcomes that ensure net biodiversity gain in the long term. However, after-use in these areas need not be restricted to agriculture and other proposals for the long-term management of habitats will be welcomed.

5.126 The technical assessment accompanying the planning application will be expected to consider the creation of these habitats throughout the life of the site, including features such as ponds, scrapes and ditches that are of significant conservation importance and could be delivered during working phases as well as on the restored site. The site design, levels and phasing of workings should optimise opportunities for these habitats. All assessments should take account of local considerations and be proportionate to the potential for wetland habitat creation on the site. *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[80] provides useful information about the types of wetland habitats that might be appropriate and how these can be created and managed. The *Worcestershire Habitat Inventory* should be referred to when considering the opportunities to link and buffer existing habitats.

In the *Sandstone Estatelands* landscape type: Optimise opportunities to conserve, enhance and create heathland and acid grassland habitats, particularly where there are opportunities to buffer and connect existing habitats

5.127 Heathland and acid grassland habitats are scarce in Worcestershire. These habitats are well suited to the underlying sandstone geology of the **North West Worcestershire Strategic Corridor** and their concentration in this area is significant on a county scale. However these habitats are still fragmented and, given their scarcity, opportunities to conserve, enhance or create these high conservation value *Biodiversity Action Plan* priority habitats should be optimised, particularly where they contribute to the wider network by extending existing heathland and acid grassland habitats or providing habitat corridors or stepping stones.

5.128 Exposed sandy soils at mineral sites provide ideal conditions for heathland and acid grassland habitats. Heathland and acid grasslands mostly occur on marginal areas such as scree slopes, cliffs and areas of exposed bare sand within aggregate sites. These habitats can develop naturally on bunds and mounds and other areas of exposed sandy soils giving opportunities to deliver biodiversity benefits throughout the life of the site. Managing phased extraction with set-aside for wildlife can make a significant difference for biodiversity in this area.

5.129 Opportunities to incorporate appropriate grazing practices and haymaking into the management of sites could contribute to the long-term economic viability of the land and deliver outcomes that ensure net biodiversity gain in the long term. However, after-use in these areas need not be restricted to agriculture and other proposals for

80 Worcestershire County Council (2013) *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites* available at www.worcestershire.gov.uk/mineralsbackground.

the long-term management of habitats will be welcomed. Where the restoration is to agriculture or recreation, there are opportunities to retain low nutrient soils and create acid grassland in more marginal areas such as along field boundaries. Larger areas of acid grassland could be created in keeping with locally characteristic field patterns.

5.130 The technical assessment accompanying the planning application will be expected to consider the creation of these habitats during working phases as well as on the restored site. The site design and phasing of workings should optimise opportunities for these habitats and soil management should ensure the retention of low nutrient sandy soils for the creation of acid grassland. All assessments should take account of local considerations and be proportionate to potential for heathland and acid grassland creation on the site. *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[81] provides useful information about the creation and management of acid grassland habitats at mineral sites.

5.131 The *Worcestershire Habitat Inventory*[82] should be referred to when considering the opportunities to link and buffer existing habitats. This should look beyond the boundaries of both the individual site and the **North West Worcestershire Strategic Corridor**.

In the *Sandstone Estatelands* landscape type: Facilitate arable or horticultural land use that optimises opportunities to restore primary hedgerows, integrate wide field margins and create heathland habitats

5.132 In the *Sandstone Estatelands* landscape type in the **North West Worcestershire Strategic Corridor** there are large areas of Best and Most Versatile Agricultural Land.[83] These are open, rolling landscapes characterised by an ordered pattern of large, arable fields, straight roads and estate plantations and straight thorn hedges.

5.133 Where restoration to agriculture is proposed, arable land-uses can contribute positively to the character and local distinctiveness of the landscape. Small conservation headlands, buffers and borders set aside and appropriately managed can provide opportunities for heathland and acid grassland habitat. Where acid grassland is not appropriate neutral grassland is encouraged to deliver biodiversity benefits. These habitats are best delivered on poor quality soils. In some cases, particularly where agricultural land quality is lower, the creation of more extensive heathland and acid grassland habitats might be more appropriate.

5.134 The technical assessment accompanying the planning application will be expected to demonstrate how the site design, levels and phasing of workings and long term management proposals will integrate opportunities for the creation of heathland and acid grassland and how they will contribute to landscape character and habitat networks.

In the *Riverside Meadows* landscape type and *Sandstone Estatelands* landscape type: Conserve, enhance and restore characteristic hedgerow patterns and continuous tree cover along hedgelines, ditches and watercourses

5.135 The conservation and restoration of hedgerows in the *Sandstone Estatelands* and *Riverside Meadows* landscape types of the **North West Worcestershire Strategic Corridor** will contribute to the structure of these landscapes, the local distinctiveness of the area, and provide habitat functionality.

5.136 Linear tree belts along ditches, watercourses and in hedgerows are key characteristics of the *Riverside Meadows* landscape type, which is comprised of large to medium sized fields with ditch and hedge boundaries.

5.137 The enhancement of hedgelines that contribute to the secluded pastoral landscape and continuous tree cover along watercourses will be encouraged. Adjoining ditches containing marsh vegetation can link habitats and provide important additional out of channel habitat for fish and amphibians. They are a characteristic feature of Worcestershire's floodplains and support wetland habitats.

81 Worcestershire County Council (2013) *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites* available at www.worcestershire.gov.uk/mineralsbackground.

82 See Worcestershire Habitat Inventory information at http://www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.

83 Best and Most Versatile Agricultural Land is defined in the National Planning Policy Framework and shown on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

5.138 In the *Sandstone Estatelands* landscape type, focus should be placed on primary hedgerow patterns. There is a smaller but important group of ancient boundaries. The principal component species in this landscape are English Elm, Hawthorn, Blackthorn and Damson, with Holly also found locally. The hedgerow resource is generally in a poor and declining condition. There are opportunities to make improvements to the hedgerow network during mineral working and restoration, using locally appropriate species. In particular continuous tree cover along watercourses and the creation of wide field margins is encouraged.

5.139 The technical assessment accompanying the planning application will be expected to consider these features and habitats and demonstrate how the proposed development will conserve, enhance and restore them across all phases of the site's life. Consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

In the *Unenclosed Commons* landscape type: Conserve and enhance the unenclosed visual distinctiveness of open common areas

5.140 The overriding characteristic of the *Unenclosed Commons* landscape type is the lack of enclosure and all methods of enclosure, including hedgerows, are likely to be inappropriate in this landscape type. The use of screening, planting or bunds to mitigate the impact of mineral workings is discouraged in these areas and where it is necessitated by safety or amenity considerations it should be temporary and removed at the earliest opportunity.

5.141 The technical assessment accompanying the planning application will be expected to demonstrate how these considerations have informed the design and layout of the site and any restoration proposals.

Typical Sandstone Estateland landscape, Lower Habberley, Worcestershire

Salwarpe Tributaries Strategic Corridor

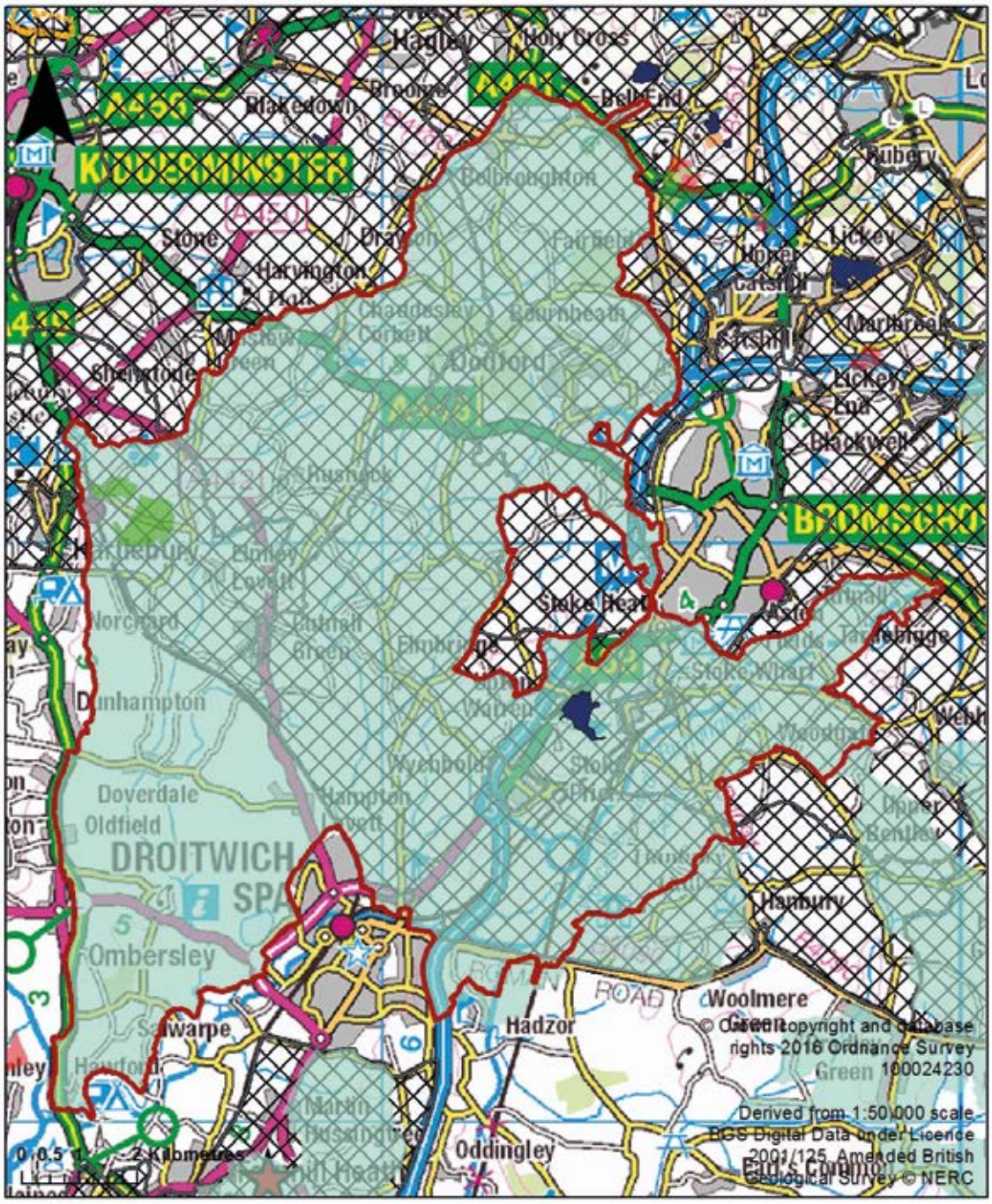
5.142 The **Salwarpe Tributaries Strategic Corridor** is identified in the **Key Diagram** in **Chapter 4** and shown in detail in **Figure 5.5**. It contains 14%[84] of the county's Mercia Mudstone clay resource, 6%[85] of the county's known former building stone quarries and 1%[86] of the county's key and significant terrace and glacial sand and gravel resources.[87]

5.143 There are three current workings,[88] two operational brickworks,[89] and one historic working[90] but there are no **specific sites** or **preferred areas** in the **Salwarpe Tributaries Strategic Corridor**.

5.144 The **Salwarpe Tributaries Strategic Corridor** encompasses the *Principal Timbered Farmlands* landscape type[91] within the *River Severn Catchment Flood Management Plan* sub-area "Telford, Black Country, Bromsgrove, Kidderminster & Coventry Cluster".[92] The Principal Timbered Farmlands landscape type extends beyond this catchment, but the *River Severn Catchment Flood Management Plan* sub-area boundary has been used to define the southern boundary of the **strategic corridor** to keep it sufficiently focused and meaningful on a landscape-scale, but large enough not to unduly fetter opportunities for the working of potential clay resources.

84 By area.
85 9 out of 161 quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone* up to March 2016. See http://www.buildingstones.org.uk.
86 By area.
87 For further information, see *Analysis of Mineral Resources in Worcestershire (2016)* available from www.worcestershire.gov.uk/mineralsbackground.
88 As of November 2016: Hartlebury Quarry (active), New House Farm Quarry (active), Waresley Quarry (active). These are shown on Figure 5.5 and can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
89 The Hartlebury and Waresley brickworks.
90 One site known to have been worked which has been digitised but for which no information is available.
91 Landscape Type profiles can be downloaded from the Worcestershire Landscape Character Assessment webpages at www.worcestershire.gov.uk/lca.
92 This mirrors the Water Framework Directive "Severn Middle Worcestershire" catchment.

Figure 5.5 Salwarpe Tributaries Strategic Corridor



Policy MLP 6: Salwarpe Tributaries Strategic Corridor

Contributing to:

Objective 1 Objective 3 Objective 4 Objective 5 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted for mineral development within the **Salwarpe Tributaries Strategic Corridor** that contributes towards the quality, character and distinctiveness of the corridor through the delivery and enhancement of high quality green infrastructure networks.

The priorities for the **Salwarpe Tributaries Strategic Corridor** are to:

- conserve, enhance and restore characteristic hedgerow patterns and structure and optimise opportunities to protect, restore, link and buffer relic ancient woodlands;
- optimise opportunities to increase permanent pasture and restore and link lowland meadows;
- optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long-term management of the site and the impacts of long-term use for public access.

A level of technical study appropriate to the proposed development will be required to demonstrate how the landscape-scale priorities for the corridor and any site-specific considerations have informed the development proposals.

Reasoned justification

5.145 **Policy MLP 6** outlines the strategic framework for the delivery of multifunctional green infrastructure in the **Salwarpe Tributaries Strategic Corridor**. The priorities for the corridor will contribute to each of the green infrastructure components and climate change adaptation and mitigation as outlined in **Table 5.5**. These are likely to be delivered through the combination of development of multiple sites, as well as through alterations at existing sites as opportunities arise.

5.146 The corridor priorities can be integrated and delivered alongside each other. In some cases it may not be possible or desirable to deliver all priorities on a single site. The size of the site and other local factors should be taken into account to ensure that the site design, and the priorities it contributes towards, are the most appropriate for that location. Where focusing on fewer priorities would deliver greater overall benefits than trying to deliver against all of the priorities for the corridor this will be supported.

Typical Principal Timbered Farmland landscape, near Wichenford

Typical Principal Timbered Farmlands landscape, Bredicot

Table 5.5. Contribution of Salwarpe Tributaries Strategic Corridor priorities to green infrastructure and climate change resilience and mitigation

	GI Functions							
Key ● = strong positive contribution ♦ = potential positive contribution ? = unclear X = likely conflict	Access and recreation (policy MLP 17)	Biodiversity (policy MLP 18)	Landscape character and local distinctiveness (policy MLP 19)	Agriculture (policy MLP 20)	Geodiversity (policy MLP 21)	Water environment (policy MLP 22)	Historic Environment (policy MLP 23)	Climate change resilience and mitigation (policy MLP 15)
Across the whole strategic corridor								
Conserve, enhance and restore characteristic hedgerow patterns and optimise opportunities to protect, restore, link and buffer relic ancient woodlands	♦	●	●	♦	?	●	♦	●
Optimise opportunities to increase permanent pasture and restore and link lowland meadows	♦	●	●	●	?	♦	♦	●
Optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long-term management of the site and the impacts of long-term use for public access	●	♦	♦	X	♦	♦	♦	?

Conserve, enhance and restore characteristic hedgerow patterns and structure and optimise opportunities to protect, restore, link and buffer relic ancient woodlands

5.147 The key element of the *Principal Timbered Farmlands* landscape type is the strong, unifying presence of tree cover in the form of woodlands, hedgerow trees and linear tree cover associated with streams and watercourses. The combined presence of these tree cover elements provides an essential sense of scale and enclosure, and creates the filtered views that are distinctive in this landscape. The resulting woodland character is essentially that of mixed native broadleaved trees, with oak the dominant species. Lines of mature oak are a particular feature of the hedgerows. The distribution of woodland is uneven throughout these landscapes.

5.148 There is considerable potential for new woodland planting especially adjacent to existing woodland and along roads and where it can repair fragmented streamside cover. New planting of semi-natural woodland which links fragmented relic ancient woods is especially encouraged. Woodlands in these landscapes vary in size from small field corner copses to those of a size exceeding that of the surrounding fields. The shape of new woodlands should reflect the overall irregular, organic structure of the *Principal Timbered Farmlands*.

5.149 Whilst planting new woodland is encouraged and offers biodiversity benefits, perpetuating hedgerow oaks is a priority in landscape terms. The tree cover and character of hedgerow oaks should be maintained and enhanced. The age distribution of hedgerow oak is unbalanced, with the majority classed as mature or veteran, and planting or maintaining younger hedgerow oaks could help address this imbalance and ensure this landscape feature is retained over time.

5.150 It is vital for the retention of the character of the *Principal Timbered Farmlands* landscape type that the organic pattern of enclosure is preserved and that a geometric pattern is not superimposed by subdividing or enlarging fields or employing straight fence or hedgelines.

5.151 Wet woodland is often associated with linear strips along smaller streams and could also be enhanced. In the *Forest of Feckenham Biodiversity Delivery Area* hedgerow fruit trees might be appropriate, with an emphasis on the fruit type and varieties associated with different locations.

5.152 The technical assessment accompanying the planning application should demonstrate how opportunities for the protection, enhancement and creation of characteristic hedgerow patterns and woodland habitats have been considered and how site design and phasing of workings optimise opportunities for these habitats. All assessments should take account of local considerations and be proportionate to the potential for woodland habitat creation on the site. *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[93] provides useful information about the types of woodland habitats that might be appropriate and how these can be created and managed. The *Worcestershire Habitat Inventory* and *Trees and Woodland in Worcestershire: Biodiversity and Landscape Guidelines for their planting and management*[94] should be referred to when considering the opportunities to link and buffer existing habitats.

Optimise opportunities to increase permanent pasture and restore and link lowland meadows

5.153 Much of the *Principal Timbered Farmlands* landscape type is used for mixed agriculture. Pasture can have greater benefits for water quality, flood betterment and biodiversity than arable land uses due to the farming methods used.

5.154 In areas of underlying sandstone, acid grassland or neutral grassland habitats could deliver biodiversity benefits. In areas around water courses where there is seasonal inundation of land wet grassland, seasonal grazing may be more appropriate.

5.155 The technical assessment accompanying the planning application will be expected to consider the conservation and creation of permanent pasture, taking account of local considerations. This should demonstrate how the site design and phasing of workings and long term management proposals will optimise opportunities for the creation of permanent pasture and how it will contribute to landscape character and habitat networks.

Acid grasslansd habitat

93 Worcestershire County Council (2013) *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites* available at: www.worcestershire.gov.uk/minerals.

94 Worcestershire County Council and Forestry Commission (2010) *Trees and Woodland in Worcestershire: Biodiversity and Landscape Guidelines for their planting and management.* http://www.worcestershire.gov.uk/downloads/file/4790/woodland_guidelines.

Optimise opportunities for the creation of sub-regional scale accessible semi-natural green space taking account of long-term management of the site and the impacts of long-term use for public access

5.156 The area around Worcester currently has few sub-regional assets and yet significant new housing growth is likely to be seen to the south, north and west of Worcester. There is an identified need for a strategic recreation asset in the vicinity of the **Salwarpe Tributaries Strategic Corridor** to relieve pressure on the Malvern Hills and other sub-regional assets.[95]

5.157 An informal recreation site could be in keeping with the *Principal Timbered Farmlands* landscape type, particularly where it integrates woodland provision or characteristic hedgerow patterns, tree cover and field patterns to contribute to the structure of the landscape. The provision of strategic recreation assets would require a site of over 100ha. This could be from a single site, but opportunities may exist for the coordinated restoration of smaller sites to be delivered in combination to facilitate the provision of a sub-regional scale asset.

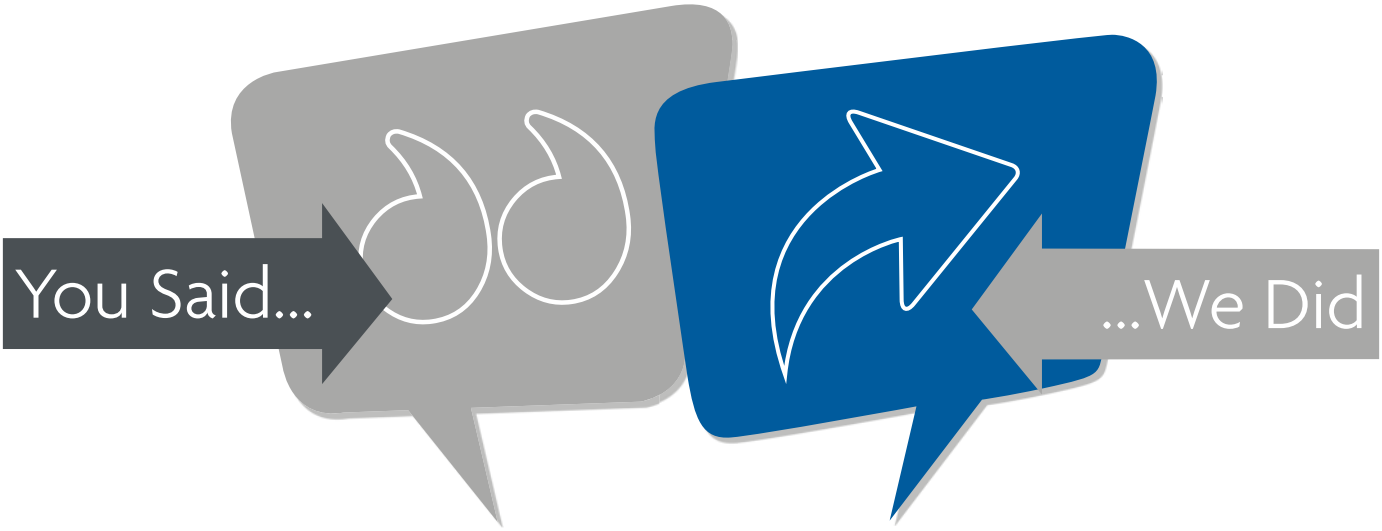
5.158 The creation of a recreation asset and any associated built development, such as to provide visitor facilities, would require separate planning permission from the relevant Local Planning Authority. However, minerals development in this area will be expected to fully consider the opportunities the site could offer in designing the site's working and restoration schemes. This could include the topography and landform of the site, enhancing biodiversity and geodiversity in order to create a distinctive visitor experience. Phasing of working and restoration should enable such a recreation facility to be developed safely as early as possible in the site's life.

5.159 The technical assessment accompanying the planning application will be expected to demonstrate that opportunities for the creation of sub-regional scale accessible semi-natural green space have been fully considered, taking account of the need for long-term management of the site and the impacts of long-term use for public access. Consideration of these opportunities is expected to be integral to the design and layout of the site and any restoration proposals.

95 The need for a strategic recreation asset is identified in the adopted *South Worcestershire Development Plan 2016* (http://www.swdevelopmentplan.org/) and the Worcestershire Green Infrastructure Framework Document 3 (www.worcestershire.gov.uk/GI). This is based on the access to, and capacity of, existing recreation assets and the impacts of planned housing growth. The *Worcestershire Green Infrastructure Framework Document 3* suggests two alternative areas of search north of Worcester.

Typical Riverside Meadows landscape, Temeside Way near Worcester

Developing the Third Stage Consultation



The *First Stage Consultation on the Minerals Local Plan* proposed developing the spatial strategy for mineral development based on working viable resources in the areas where there is greatest ability to achieve restoration priorities. An area-based approach to delivering this was supported during the *First Stage Consultation* and was developed in the *Second Stage Consultation*.

In both the first and second stage consultations, the Mineral Planning Authority said that it did not intend to identify specific sites for the working of minerals. Instead it would include a key diagram directing development to broad areas where extraction is preferred and identify the restoration priorities for these areas.

In the *Second Stage Consultation* the **spatial strategy** set out:

- **areas of search** for aggregates:
  - terrace and glacial sand and gravel: 11 areas of search
  - Solid sands: 6 areas of search (silica sand was considered in the identification of these areas of search)
  - Crushed rock: 2 areas of search
- **Potential opportunity areas** for the working of clay: These would not have the same status as an area of search but would give an indication of areas where clay working could be possible and would highlight its importance in the **spatial strategy**
- Overarching restoration priorities for sand and gravel and crushed rock corridors (clusters of areas of search).

During the *Second Stage Consultation* the minerals industry, members of the public and the *Initial Sustainability Appraisal*[96] expressed significant concerns about how **the areas of search** had been identified and how any proposed sites outside of the areas of search would be handled. In addition there was a strong level of disagreement regarding the intention not to allocate specific sites. As such the Mineral Planning Authority has revised its approach.

Site Allocations

The overall response to the *Second Stage consultation on the Minerals Local Plan* was that the areas of search were too broad and did not provide enough certainty for industry or communities. The National Planning Practice Guidance, published after the *Second Stage Consultation*[97] also made clear the expectation for Mineral Planning Authorities to allocate specific sites or preferred area.

The *Second Stage Consultation* asked for broad information on mineral resources, it stated the intention not to allocate sites and did not ask for site proposals. Despite this 10 sites were put forward in response to the consultation by industry, landowners and agents. It was

96 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

97 March 2014

therefore clear from consultation responses and national policy that the Minerals Local Plan should allocate sites. A *First Call for Sites* (focusing on aggregates) was made in summer 2014 to ensure fair opportunity had been given to put sites forward and that there was opportunity to provide enough information to enable all proposals to be assessed on the same basis. A further 11 sites were put forward in response to the *First Call for Sites*.

A *Second Call for Sites* was conducted in summer 2015. This was a call for sites for non-aggregate minerals and was also a further call for sites for aggregate minerals. A further 9 sites were put forward in response to the *Second Call for Sites*.

The Mineral Planning Authority has undertaken a *Deliverability Assessment*[98] of all the proposed sites to identify whether they are suitable for allocation as **specific sites** or **preferred areas** based on the considerations in national policy and guidance. As a result of the *Deliverability Assessment* four of the sites were considered highly likely to be deliverable;[99] these have been allocated as Specific Sites in the *Third Stage Consultation*. Two of the sites were considered to have the potential to pass the tests set out in the *Deliverability Assessment* but with some remaining uncertainty,[100] these have been allocated as **preferred areas** in the *Third Stage Consultation*. The *Deliverability Assessment* found that for the remaining 24 sites there were likely to be serious constraints to delivery based on the information received.[101]

Statutory consultees and other relevant bodies were consulted about each of the proposed sites, and their responses have informed the *Deliverability Assessment*.[102] Where they raise issues that may need to be addressed by a developer this information is included in **Appendix 2**.

However the allocated **specific sites** and **preferred areas** would not provide enough mineral resources for the life of the plan (see **Chapter 5: Steady and Adequate Supply of Mineral Resources**), meaning that some development will need to be delivered through windfall sites. This means that in line with national policy "areas of search" still need to be identified in the Minerals Local Plan.

Areas of search, potential opportunity areas and strategic corridors

Areas of search

The *Second Stage Consultation* document identified areas where significant resources were clustered into groups big enough to deliver coordinated restoration benefits. It then considered whether those clusters had the potential to serve likely areas of demand for aggregates, and identified these as "Areas of Search" for aggregate minerals. The ethos of this approach was largely supported; however concerns were raised about several aspects of the method for identifying the areas of search.

The *Analysis of Mineral Resources in Worcestershire*[103] was used as the starting point for identifying aggregate resources likely to be significant. The minerals industry raised questions about how the tonnages had been calculated and the additional information provided enabled the analysis to be updated and re-issued for consultation in summer 2015.[104]

The consultation responses and the *Initial Sustainability Appraisal*[105] suggested that the thresholds used to identify the clusters of aggregate resources were either arbitrary or not fully justified in the document, and ignored the potential of smaller resource areas to deliver benefits across the different green infrastructure strands. This approach to clustering was considered to be a poor tool for delivering a landscape scale approach, focusing on proximity of resources rather than whether the localities shared any issues or characteristics. As such it was felt that the clusters, as defined, would make negligible contribution to the delivery of the vision.

In response to these comments the Mineral Planning Authority remained committed to the guiding principal of "working viable resources in the areas where there is greatest ability to deliver a positive legacy". This principle had largely been supported in the first stage and second stage consultations. However there was a need to reassess the approach taken to delivering this.

Due to the need for windfall sites it was clear that **areas of search** would be required. The spatial distribution of key and significant resources[106] was looked at afresh in developing the *Third Stage Consultation* document to identify whether there was any coherence between resources on a landscape scale or whether a set of county-wide priorities would be a better approach. Consideration of resources in combination with the environmental baseline showed that there were coherent

98 Worcestershire County Council, 2016, *Worcestershire Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment*, available at **www.worcestershire.gov.uk/mineralsbackground**
99 Graded green
100 Graded amber
101 Graded red
102 Worcestershire County Council, 2016, *Worcestershire Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment*, available at **www.worcestershire.gov.uk/mineralsbackground**
103 The original Analysis of Mineral Resources document is not available to download, but the amended version makes clear the changes that have been made and their impact on the outcome of the analysis. See Worcestershire County Council (2016) "*Analysis of Mineral Resources in Worcestershire*", available at **www.worcestershire.gov.uk/minerals**
104 The original Analysis of Mineral Resources document is not available to download, but the amended version makes clear the changes that have been made and their impact on the outcome of the analysis. See Worcestershire County Council (2016) "*Analysis of Mineral Resources in Worcestershire*", available at **www.worcestershire.gov.uk/minerals**
105 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
106 This included sand and gravel, crushed rock and Mercia Mudstone Group clay (see discussion of clay below).

groups of resources within distinctive corridors. This led to the identification of 7 larger scale **strategic corridors**:

- Avon and Carrant Brook Strategic Corridor
- Bredon Hill Strategic Corridor
- Lower Severn Strategic Corridor
- Malvern Hills Strategic Corridor
- North East Worcestershire Strategic Corridor
- North West Worcestershire Strategic Corridor
- Salwarpe Tributaries Strategic Corridor

These strategic corridors[107] were formed taking into account the key and significant resources identified in the revised *Analysis of Mineral Resources*[108] and the approach outlined in **Appendix 3**. Whilst the **areas of search** in the second stage consultation applied only to aggregates, the **strategic corridors** in this *Third Stage Consultation* apply to all types of minerals, reflecting the overlap between different types of minerals, for example terrace and glacial sand and gravel may overlie solid sand or clay resources.

However during the preparation of the *Third Stage Consultation* significant discussion has been undertaken with the West Midlands and surrounding Aggregate Working Parties about the recognised constraints on Worcestershire's crushed rock resources.[109] Due to the impact of these constraints on the county's crushed rock supply the Malvern Hills Strategic Corridor and the Bredon Hill Strategic Corridor have not been included in the Spatial Strategy in the *Third Stage Consultation* (Annex 1), although they have been included in the statutory assessments of the emerging document.[110]

Potential opportunity areas

The *Second Stage Consultation* identified an "**opportunity area**" for clay, incorporating the entire Mercia Mudstone Group, stating that there was "no information to refine this to identify meaningful areas of search". Herefordshire and Worcestershire Earth Heritage Trust offered assistance to refine the clay resource. Information they provided has since informed revisions to the background document *Clay in Worcestershire*[111] and has influenced the development of the *Third Stage Consultation*. The definition of the **strategic corridors** now takes account of clay resources as well as aggregates.

Other minerals

The *Second Stage Consultation* set out the reasons why no **areas of search** were identified for other industrial or energy minerals. Whilst respondents broadly agreed with these reasons, a number of suggestions were made. Droitwich Spa Town Council expressed concerns that the Minerals Local Plan should not prejudice brine being used in spa bathing or souvenir salt production, and the minerals industry commented that the Minerals Local Plan should seek to provide silica sand in line with national policy requirements. Comments also raised concerns about oil and gas (or "fracking") being linked with sand and gravel. However no evidence was received to indicate that these minerals are locally or nationally important. As such the **spatial strategy** in the *Third Stage Consultation* does not make specific provision for these minerals when identifying the **strategic corridors.**

Consultees suggested that the plan should enable extraction of building stone and should not limit this only to small-scale extraction for heritage purposes. It was suggested that the Earth Heritage Trust's project *A Thousand Years of Building with Stone* may be useful in identifying sources of building stone. The Minerals Planning Authority has since been involved as a member of the project's advisory panel and its findings have influenced the development of the *Third Stage Consultation*.

Overarching restoration priorities

Responses to the *First Stage Consultation* on the Minerals Local Plan raised concerns that a blanket policy or county-wide approach to setting issue-based restoration priorities would not be appropriate. An area-based approach was generally supported. Respondents agreed that considering restoration as a driver in the spatial strategy could deliver significant potential for integrated restoration benefits and made specific reference to habitat connectivity, landscape character, historic landscape character and flood alleviation.

The need for clear restoration plans at application stage was raised and the long-term flexibility of such schemes to respond to changing circumstances was also considered key.

The *Second Stage Consultation* identified eight high-level strategic restoration priorities[112] for the areas of search and the the opportunity area for clay. It used these to set overarching restoration priorities for "corridors" of **areas of search** in the Spatial Strategy.

107 The Strategic Corridors fulfil the role of Areas of Search as defined in National Policy however the term strategic corridor has been used in this document to make it clear that they are distinct from the areas of search in the *Second Stage Consultation*.

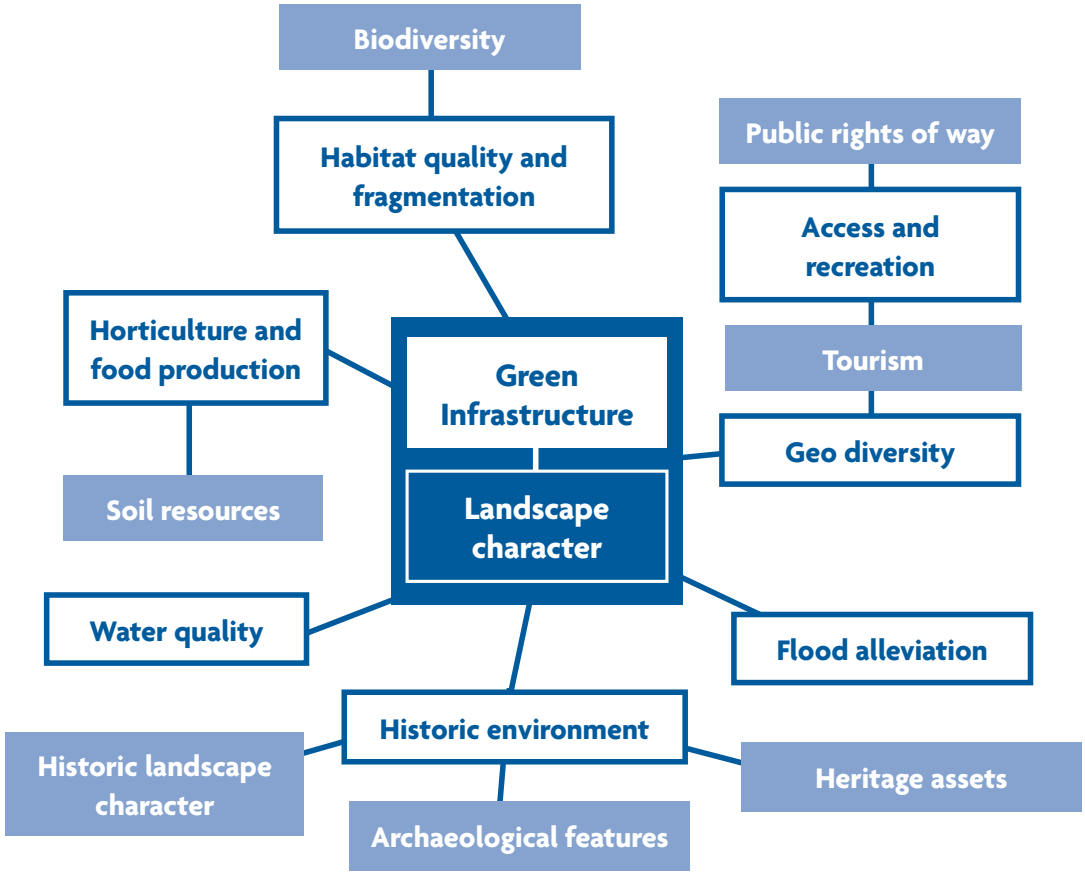
108 The original Analysis of Mineral Resources document is not available to download, but the amended version makes clear the changes that have been made and their impact on the outcome of the analysis. See Worcestershire County Council (2016) "*Analysis of Mineral Resources in Worcestershire*", available at **www.worcestershire.gov.uk/minerals**

109 See Worcestershire County Council, 2016, *Minerals Local Plan Background Document - Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*, available at **www.worcestershire.gov.uk/mineralsbackground**

110 Sustainability Appraisal, Habitats Regulations Assessment and Strategic Flood Risk Assessment. All of these are available at **www.worcestershire.gov.uk/mineralsbackground**

111 Worcestershire County Council, 2015, *Worcestershire Minerals Local Plan Background Document: Clay in Worcestershire*, available at **www.worcestershire.gov.uk/mineralsbackground**

112 Landscape character, habitat quality and fragmentation, access and recreation, geodiversity, flood alleviation, historic environment, water quality, and horticulture and food production.



The *Second Stage Consultation* identified priorities for the areas of search based on the idea that "the underlying principle of the Green Infrastructure approach is to take a holistic view that integrates a variety of inter-related components; by thinking of areas of search as inter-related corridors rather than isolated areas there is a real opportunity to deliver focused and achievable restoration benefits that are appropriate to the location rather than one-size-fits-all restoration schemes."

The *Second Stage Consultation* rated the significance of each of the strategic restoration priorities in each area of search as:

- 1 Determining factors,
- 2 Significant components,
- 3 Considerations to be integrated into restoration where possible, or
- not likely to be a significant consideration in that particular area of search,

The **spatial strategy** used this rating to identify the corridors where each of the green infrastructure strands was an overarching priority. A significant amount of detail was set out to show how the method for ranking the strands had been developed, but the *Second Stage Consultation document* didn't give any indication of how this weighting of priorities should inform the delivery of restoration schemes in each area of search.

The majority of responses to the *Second Stage Consultation* and the *Initial Sustainability Appraisal*[113] supported the green infrastructure approach. However, questions were raised over the methodology used and the resulting balancing of priorities. The methodology resulted in the same priority level for a particular factor in areas of search which are quite different and respondents felt that this did not account for the specific issues or nuances of each **area of search** or give any direction about how restoration proposals could contribute towards the distinctiveness of these areas. Concerns were raised by industry that the restoration approach would be too prescriptive and would not allow for site-specific factors and landowner requirements to be considered,

113 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6.**

stating that this would be more appropriately considered for **specific sites** or **preferred areas**, rather than for large areas of search. There was concern that the integration of priorities and considerations could lead to multiple after-uses on any one site and that this could potentially weaken the delivery of individual restoration priorities.

These issues have been considered and the approach in the *Third Stage Consultation* has been developed in discussion with members of a Minerals Green Infrastructure Steering Group.[114] This *Third Stage Consultation* seeks to consider the nature of the issues and the opportunities for mineral working to contribute to them throughout the entire life of the site rather than only through site restoration. Rather than ranking the issues to give a generic priority level, the *Third Stage Consultation* gives a tailored approach for each **strategic corridor,** identifying integrated multifunctional priorities that are outcome focused and specific to each **strategic corridor**. They are intended to give greater direction for the developer and decision maker and provide the flexibility for site-specific issues to be taken into account. The priorities identified for each **strategic corridor** address distinctive issues for the particular corridor, with the policy framework in **Chapter 7** (**Development Management**) picking up on the issues which should be addressed by all mineral development on a site specific basis. The contribution of each of these priorities to each of the green infrastructure strands is outlined in the reasoned justification for each **strategic corridor** policy.

The *Second Stage Consultation* included three alternative options for integrating the restoration priorities into the policy framework. The response to these alternatives was too mixed to offer a clear direction. The approach to defining areas of search/ strategic corridors and their green infrastructure priorities has changed significantly, however several key messages have shaped the *Third Stage Consultation*.

Now that a full draft of the intended policy framework is available for consideration, the Mineral Planning Authority is asking whether Supplementary Planning Documents that "masterplan" the green infrastructure components of **specific sites** and **preferred areas** would be supported (see consultation questions below). These would need to be supported by key partners and have industry and community buy-in as the level of information required would exceed that provided through the call for sites.

The *Initial Sustainability Appraisal*[115] stated that whether restoration priorities were integrated into the Minerals Local Plan or Supplementary Planning Documents, some form of dynamic database would be required to enable developers to view the data that had informed these priorities and to ensure that assets identified after the plan is published are not overlooked as proposals are developed. An interactive minerals mapping tool[116] has been developed to help inform development both at the landscape scale and on a site by site basis, and it is proposed that the data it shows will be updated annually as part of the production of the Minerals and Waste Development Framework Annual Monitoring Report.

114 The Minerals Green Infrastructure Steering Group includes Historic England, the Environment Agency, the Forestry Commission, Herefordshire & Worcestershire Earth Heritage Group, Natural England, Nature After Minerals/RSPB, Worcestershire Wildlife Trust, and Worcestershire County Council (Strategic Planning & Environmental Policy, Ecology, Landscape, Development Management, Water/ flooding, Countryside Access & Recreation, Historic Environment officers).

115 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**.

116 Interactive minerals mapping tool available at **www.worcestershire.gov.uk/minerals**.

Third Stage Consultation on the Minerals Local Plan: Consultation Questions

Q5.1 Do you agree with the approach to defining the strategic corridors?

a) Considering key and significant sand and gravel as identified in the resource assessment.

b) Considering Mercia Mudstone group clays

c) Not identifying strategic corridors for crushed rock.

d) Not identifying strategic corridors specifically for any other minerals.

e) Using landscape character as the primary indicator of landscape scale coherence

Q5.2 Do you agree with the specific boundaries for each strategic corridor?

a) Avon and Carrant Brook Strategic Corridor

b) Lower Severn Strategic Corridor

c) North East Worcestershire Strategic Corridor

d) North West Worcestershire Strategic Corridor

e) Salwarpe Tributaries Strategic Corridor

Q5.3 Do you agree that corridors containing crushed rock resources (see Annex 1) should not be designated as Strategic Corridors?

a) Bredon Hill

b) Malvern Hills

Q5.4 Do you think that there are any other coherent corridors containing locally or nationally significant mineral resources which should be designated as strategic corridors?

Q5.5 Do you agree with method used to identify specific sites and preferred areas (see Appendix 2 and the *Deliverability Assessment* for further details)?

a) Specific sites

b) Preferred sites

Q5.6 Do you have any further information about ANY of the sites submitted which might alter their Deliverability Assessment outcome? Please use the site reference given in the Deliverability Assessment and provide appropriate evidence to support this?

Q5.7 - THIRD CALL FOR SITES: Do you have any further sites for mineral working or supporting infrastructure to put forward for consideration against the *Deliverability Assessment*? We will need the following information to assess whether the sites you propose should be included in the Minerals Local Plan (you may find the interactive minerals mapping tool useful):

- A **location plan**, preferably on an OS map base.
- An estimate of the **quantity of mineral resource**. Borehole or other survey results would be helpful.
- Details of **minerals operator(s)** interested in working the site (an estimate of when they might expect to bring the site forward would help us to plan delivery through the plan period).
- Details of **landowner(s)** and confirmation that they would support mineral working. Landowners should be aware from the start of the process that sites may not be fully restored to agricultural use following extraction.
- Details of any **landowner or community aspirations** for the land which might influence site restoration and after-use options.
- Potential **site access** options (water, rail, conveyor and/or road).
- **Processing options** – would you expect processing plant to be provided on site, or would material be transported to another site for processing?

Please note, any information you submit will be in the public domain. We will consider any sites put forward and consult on them as part of the plan we intend to submit to the Secretary of State for Examination.

Q5.8 Do the policies and the reasoned justification contribute towards the achievement of the vision, objectives and spatial strategy and the character and distinctiveness of the strategic corridor?

Policy MLP 1: Strategic Location of Development

Policy MLP 2: Avon and Carrant Brook Strategic Corridor

Policy MLP 3: Lower Severn Strategic Corridor

Policy MLP 4: North East Worcestershire Strategic Corridor

Policy MLP 5: North West Worcestershire Strategic Corridor

Policy MLP 6: Salwarpe Tributaries Strategic Corridor

Q5.9 Are there any wording changes which you would suggest to Chapter 5 to improve clarity or any other issues which you think should be considered?

Q5.10 Would you support the development of Supplementary Planning Documents that "masterplan" the green infrastructure components of specific sites and preferred areas?

Please indicate whether you represent an organisation, are a minerals operator, or are a member of a local community who could assist with providing the level of information required

Processing recycled aggregate at Stanford highway depot, near Kidderminster

6. Steady and adequate supply of mineral resources

Introduction

6.1 Minerals are essential to support sustainable economic growth and quality of life.[1] They provide the raw materials for development, infrastructure and industry. To ensure that minerals are readily available to meet market demand and to minimise uncertainty and volatility in supply, it is important for the Minerals Local Plan to ensure that:

- there is a sufficient and sustainable stock of reserves at sites with planning permission (for aggregate minerals this is referred to as a "landbank");
- there are enough sites with the capacity to produce, process and sell what is required ("productive capacity"). This can be affected by commercial decisions, changes to plant and machinery and working practices, or natural events;
- there is enough flexibility to ensure that demand can be met even if natural events or commercial decisions limit production at one or more site(s); and
- large landbanks at very few sites do not stifle competition.

6.2 Steady and adequate supply of minerals also requires mineral sites, and facilities and infrastructure which support the extraction, processing and sale of minerals to be able to operate without being prejudiced by the introduction of sensitive land uses in close proximity. This is considered in **Chapter 8**.

6.3 The level of supply considered to be "adequate" varies for different types of minerals. The *National Planning Policy Framework*[2] gives a clear direction on the minimum levels of aggregate supply considered to be "adequate", requiring the maintenance of landbanks of at least 7 years for sand and gravel and at least 10 years for crushed rock, and recognises that long-term investment needs influence the requirements for industrial minerals. The supply of aggregates and industrial minerals is driven by a wide range of development demands which are reliant on a steady supply of materials to maintain certainty in the economy, whilst the demand for building stone is more likely to be related to a particular project and does not necessarily require a steady amount to be produced annually.

1 Department for Communities and Local Government (March 2012) *National Planning Policy Framework*, paragraph 142
2 Department for Communities and Local Government (March 2012) *National Planning Policy Framework*, paragraph 145.

6.4 The *2016 Local Aggregates Assessment*[3] sets out the baseline data underpinning the Minerals Local Plan with regard to aggregates, this is based on data up to 31st December 2015. The baseline for industrial minerals, energy minerals and building stone is set out in the relevant background papers and the *Worcestershire Annual Monitoring Report 2014-2015*.[4]

Contribution of substitute, secondary and recycled materials and mineral wastes to overall minerals supply

6.5 Mineral resources are finite and it is important to make the best use of them in the long term. The use of substitute, secondary and recycled materials and minerals waste can reduce the need for primary minerals and increase resource efficiency by using materials that might otherwise be discarded as waste. It can also contribute to the local vernacular, particularly where locally distinctive building stone or specific brick types are available from recycled sources.

6.6 The *Waste Core Strategy for Worcestershire*[5] promotes the re-use and recycling of materials and contains policies regarding the development of recycling facilities. The Local Plans and Neighbourhood Plans in the county can also encourage the use of substitute, secondary and recycled materials in development.

Mobile plant recycling road planings in situ, Newtown Road Worcester

6.7 The Mineral Planning Authority welcomes proposals that contribute towards the sustainable supply of substitute, secondary and recycled materials and minerals waste, recognising the important role this can play in reducing the needs for the extraction of primary materials.

3 The *2016 Local Aggregates Assessment* uses data up to 31st December 2015. It is available at www.worcestershire.gov.uk/amr.
4 See background documents at www.worcestershire.gov.uk/mineralsbackground, and the *Worcestershire Annual Monitoring Report 2014-2015* is available at www.worcestershire.gov.uk/amr.
5 The *Waste Core Strategy for Worcestershire Local Plan 2012-2027* is available at www.worcestershire.gov.uk/wcs.

Policy MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply

Contributing to:

Objective 2 Objective 3 Objective 4 Objective 5 Objective 6 Objective 9 Objective 12

Planning permission will be granted for development that will contribute to the overall sustainable supply of minerals from substitute, secondary or recycled materials or mineral waste.

Proposals will be required to demonstrate that the material will be managed or processed for a specified end-use as part of overall minerals supply.

Stockpiles of recycled aggregate, Stanford highways depot, near Kidderminster

Reasoned justification

6.8 Secondary and recycled materials account for 29% of the total aggregate market nationally,[6] however there are no reliable assessments to indicate the level of demand for or contribution to sustainable aggregate supply at a local level.[7] The Mineral Planning Authority is aware of the widespread use of mobile recycling plant for construction and demolition waste for highway maintenance and at building and development sites but there is no data available to indicate the level of contribution to sustainable mineral supply that these make.

6.9 Reclaimed materials have the potential to play an important role in the maintenance of historic assets and conserving and enhancing the local vernacular, reducing the need for the supply of primary building stone or locally specific brick types.

6.10 The role of secondary and recycled materials in the supply of industrial minerals will depend on their specific purpose, the specification of the materials needed and the availability of substitutes.[8] There is no data available to indicate the level of demand for, or contribution to, sustainable mineral supply likely to be made by mineral wastes or substitute materials at a local level.

6.11 There are currently no industrial processes in Worcestershire known to produce secondary aggregates or other secondary materials. However, an Energy from Waste Plant is currently under construction at Hartlebury, near Kidderminster. This is predicted to produce 40,000 tonnes per annum of incinerator bottom ash which may be capable of being used as secondary aggregate, although further processing would be required to enable this. A separate application was submitted for a facility at Veolia's Sandy Lane site near Bromsgrove to process 120,000 tonnes per annum of incinerator bottom ash from other Energy from Waste Plants outside Worcestershire.[9] The application was refused by the Mineral Planning Authority in November 2016 as it was not considered to be in an appropriate location.

6.12 Together these indicate that there is likely to be demand for facilities to manage or process secondary and recycled materials during the life of the plan and that the contribution of substitute, secondary and recycled materials and mineral wastes to overall minerals supply in Worcestershire is likely to be provided through a mixture of mobile plant and static facilities to process or store materials.

6 Mineral Products Association (2015) *The Mineral Products Industry at a Glance*, page 7, http://www.mineralproducts.org/documents/Mineral_Products_Industry_at_a_Glance_2015.pdf. 60 million tonnes of secondary & recycled material out of a total aggregates supply market of 209 million tonnes (28.7%).

7 See Worcestershire County Council *2016 Local Aggregates Assessment* at www.worcestershire.gov.uk/amr.

8 See Worcestershire County Council's background documents *Silica Sand in Worcestershire* and *Building Stone in Worcestershire* for an overview of the potential contribution of substitute and recycled materials to their overall supply, available at www.worcestershire.gov.uk/mineralsbackground.

9 Planning application 13/000027/CM can be viewed through the County Council's Planning Applications webpages at http://www.worcestershire.gov.uk/planning.

6.13 Sites which manage materials such as recycled aggregates or road planings are likely to have a relatively quick throughput, whereas sites which manage building stone recovered from the demolition of existing buildings or released through excavation for building footings may have a lower throughput and are likely to need to store the materials for longer time periods until a project arises which requires that particular material.

6.14 The role of secondary and recycled materials to the supply of aggregates is considered in the *Local Aggregates Assessment for Worcestershire* which is updated annually taking into account the advice of the West Midlands Aggregate Working Party. Any significant changes to the role of secondary and recycled materials in the balance of mineral supply and demand will be monitored through the *Annual Monitoring Report*.[10] However given the lack of robust data, **Policy MLP 7** is an enabling policy and does not set supply targets or delivery milestones.

6.15 Planning applications will be expected to contain a level of detail proportionate to the proposed development, with sufficiently detailed information to demonstrate the role of the material in replacing the need for primary aggregates. This might include details of processes required so that materials are capable of meeting a specified end use.

Recycled aggregate

Energy from Waste facility under construction, near Hartlebury

Aggregate supply

6.16 Aggregates are crucial to most forms of built development. They are strategically important and there are significant geographical imbalances across the country between where suitable natural aggregate resources exist and where they are most needed. This is recognised in national policy by the "Managed Aggregate Supply System", which requires Mineral Planning Authorities to make provision for the maintenance of landbanks for aggregate minerals of at least 7 years for sand and gravel and at least 10 years for crushed rock, to participate in the operation of an Aggregate Working Party, and to prepare an annual Local Aggregates Assessment.[11]

10 Annual Monitoring Reports are published at www.worcestershire.gov.uk/amr.

11 The *2016 Local Aggregates Assessment* sets out the baseline data for aggregate minerals underpinning the Minerals Local Plan, using data up to 31st December 2015. It is available at www.worcestershire.gov.uk/amr.

Sand and gravel supply

Policy MLP 8: Steady and Adequate Supply of Sand and Gravel

Contributing to:

Objective 1 Objective 3 Objective 9 Objective 12

Planning permission will be granted for minerals development that will contribute to the achievement of a steady and adequate supply of sand and gravel.

Proposals will be required to demonstrate that the proposed development will contribute towards the security of sand and gravel supply by:

a) increasing or maintaining Worcestershire's landbank of permitted reserves in line with the following delivery milestones:

- **Phase 1 (2016-2025)**: Increasing landbanks of permitted sand and gravel reserves as quickly as possible and subsequently maintain them at a minimum of 7 years;
- **Phase 2 (2026-2035 and beyond)**: Maintaining landbanks of permitted sand and gravel reserves at a minimum of 7 years;

and/or

b) enabling Worcestershire's productive capacity for sand and gravel supply to be maintained or enhanced.

Processing at Wildmoor Quarry, near Bromsgrove

Clifton sand and gravel working, near Worcester

Reasoned justification

6.17 In 2015, there were six sand and gravel sites in Worcestershire. Four were "active" (in production for some time during the year) and two were "inactive" (worked in the past and contain permitted reserves). One of the sites was exhausted during the year, and one classed its permitted reserves as being for "non-aggregate uses".

6.18 Worcestershire's *2016 Local Aggregates Assessment* considers the average level of sales of sand and gravel from Worcestershire[12] alongside other relevant local information to set a "production guideline" of 0.637 million tonnes per annum.[13] The Local Aggregates Assessment is produced annually and therefore the annual production guideline will vary through the life of the plan.[14] However, if sales continue at the current average of 0.637 million tonnes per year, this will amount to the production of 12.74 million tonnes of sand and gravel over the plan period from 2016-2035.

Increasing and maintaining the landbank of permitted reserves

6.19 The *2016 Local Aggregates Assessment* establishes that the landbank for sand and gravel in Worcestershire at the end of 2015 was below the minimum 7 years set out in national policy, at 1.41-1.48 years.[15] If sales continue at the current average of 0.637 million tonnes per year, Worcestershire's sand and gravel reserves will be exhausted during 2017 unless further planning permissions are granted.

6.20 Based on the production guideline of 0.637 million tonnes per annum, an additional 3.514-3.564 million tonnes of sand and gravel reserves will need to be permitted in order to reach a 7 year landbank. This means that in combination with annual production requirements, the Minerals Local Plan aims to enable at least 16.254-16.304 million tonnes of sand and gravel in order to reach and subsequently maintain a 7 year landbank of permitted reserves to 2035 and beyond.

12 The average level of sales of sand and gravel from Worcestershire over the 10 year period from 2006-2015 was 0.637 million tonnes per year. Data for sales in 2012-2013 includes sales for both Herefordshire and Worcestershire as the data for those years was combined due to confidentiality requirements. See Worcestershire County Council (2016) *Worcestershire Local Aggregate Assessment 2016* for further information, available at www.worcestershire.gov.uk/amr.

13 Worcestershire County Council, 2016, *Worcestershire Local Aggregate Assessment 2016* (using data covering the period up to 31/12/2015). In 2016 there was not sufficient evidence to suggest that the production guideline for primary sand and gravel should vary from the 10 year average. The production guideline for sand and gravel identified by the *2016 Local Aggregates Assessment* is therefore 0.637 million tonnes.

14 The production guideline in the latest Local Aggregates Assessment will be used each year in the *Annual Monitoring Report* to monitor progress against the monitoring indicators in **Chapter 9**. See www.worcestershire.gov.uk/amr.

15 At 31st December 2015, Worcestershire had 0.895-0.945 million tonnes of permitted sand and gravel reserves. The permitted reserves are divided by the annual production guideline to give the landbank in years. See Worcestershire County Council, 2016, *Worcestershire Local Aggregate Assessment 2016*.

6.21 The **specific sites** and **preferred areas** which have been allocated in the **spatial strategy** (**Chapter 4**) could together provide 6.15 million tonnes of sand and gravel towards this requirement.[16] Should planning permission be granted for all of these early in the Plan period, this would extend the life of Worcestershire's sand and gravel reserves to 2027. This means that at least 10.104-10.154 million tonnes of sand and gravel will be needed from windfall sites within the strategic corridors. The **strategic corridors** contain approximately 70%[17] of Worcestershire's key and significant sand and gravel resources.[18]

6.22 **Policy MLP 8**, alongside **Objective 3**, seeks to address this by enabling minerals development which contributes to delivering and subsequently maintaining a landbank for sand and gravel of at least 7 years whilst being flexible enough to accommodate changes to the balance of demand and supply identified in the *Local Aggregates Assessment* annually.[19]

6.23 At the start of Phase 1 (2016), the plan will be under preparation and its ability to influence decision making will be limited. Once adopted, it is anticipated that the plan will act as an impetus for development by providing greater certainty for developers, but proposals take time to be developed, submitted and determined. Therefore the **Vision** sets out a realistic but ambitious approach seeking to achieve at least a 7 year landbank by 2025 at the latest and subsequently maintaining it through the life of the plan and beyond. This is reflected in **Policy MLP 8** as well as in the monitoring indicators in **Chapter 9**. During phase 2 (2026-2035) a landbank of 7 years is the minimum which should be maintained.

6.24 All planning applications will be expected to contain a level of detail proportionate to the proposal submitted, with sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource and the contribution the proposed development would make towards Worcestershire's landbank of permitted sand and gravel reserves.

6.25 Those applications within the Wildmoor Formation should also consider whether silica sand is likely to be present, in which case the requirements of **Policy MLP 11** may apply.

Enabling productive capacity to be maintained or enhanced

6.26 In addition to maintaining a stock of permitted reserves, the Mineral Planning Authority needs to ensure sufficient productive capacity is maintained in the county. Worcestershire's overall productive capacity results from the combined capacity of individual sites to produce, process and sell minerals.

6.27 A site might have large permitted reserves but the contribution it can make to the annual supply of materials will not be able to exceed its productive capacity. Productive capacity can be directly limited by the throughput capacity of a site's processing plant, or indirectly through measures which seek to limit or mitigate environmental or amenity impacts, such as limiting opening hours or the number of vehicle movements. With relatively few active sites and limited permitted reserves, the overall security of Worcestershire's productive capacity could be put at risk by commercial decisions or natural events at any individual site.

6.28 Worcestershire's productive capacity for sand and gravel is therefore likely to be maintained or enhanced through a combination of additional sites and more efficient plant, machinery and working practices at existing sites.

6.29 Planning applications will be expected to demonstrate the contribution which the proposed development would make to maintaining or enhancing productive capacity both at the site level and in the wider context. This may include the anticipated throughput and lifespan of a new site or extended working, or the anticipated impact of new plant or amending planning conditions at existing sites.

16 Specific sites: 1.2 million tonnes at Clifton East, 1 million tonnes at Clifton South and 1.4 million tonnes at Land at Ryall North. Preferred areas: 1.8 million tonnes at Land North of Wolverley Road and 0.75 million tonnes at Ryall East. See **Chapter 4** and **Appendix 2** for further information about these sites and Worcestershire County Council, 2016, *Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment* for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.

17 By area.

18 Worcestershire County Council (2016) *Analysis of Mineral Resources in Worcestershire*, available at www.worcestershire.gov.uk/minerals.

19 The Local Aggregates Assessment is produced annually, and is based primarily on a rolling average of the previous 10-years sales. These figures therefore give a baseline but should not be considered to be static targets.

Crushed rock supply

Policy MLP 9: Steady and Adequate Supply of Crushed Rock

Contributing to:

Objective 6 Objective 9 Objective 12

Planning permission will be granted for minerals development that will contribute to achieving a steady and adequate supply of crushed rock.

Proposals will be required to demonstrate that the proposed development will contribute towards the security of crushed rock supply by:

a) increasing or maintaining Worcestershire's landbank of permitted reserves; and/or

b) enabling Worcestershire's productive capacity for crushed rock supply to be maintained or enhanced.

Reasoned justification

6.30 There has been no crushed rock production in Worcestershire since 2010, and no sites for crushed rock working have been put forward during the development of the Minerals Local Plan. There is no landbank of permitted reserves for crushed rock in Worcestershire.

6.31 Worcestershire's *2016 Local Aggregates Assessment*[20] considered the average level of sales of crushed rock alongside other relevant local information to set a "production guideline". In the case of crushed rock, local information indicated that this "production guideline" should be 0 tonnes per annum.[21] The Local Aggregates Assessment is produced annually and therefore the annual production guideline could vary throughout the life of the plan, but the constraints surrounding Worcestershire's crushed rock resources[22] mean that crushed rock working at a significant scale is unlikely during the life of the plan and the production guideline is likely to remain as 0 tonnes per annum.[23]

6.32 The Minerals Planning Authority in discussion with the West Midlands and surrounding Aggregate Working Parties agreed that the particular constraints in Worcestershire mean that the Minerals Local Plan should not pursue a greater production guideline or set a landbank requirement which it is unlikely to meet for the foreseeable future.[24] As such, **Policy MLP 9** enables crushed rock development to come forward but does not set supply targets or delivery milestones.

6.33 Any planning applications which do come forward will be expected to contain a level of detail proportionate to the proposal submitted, with sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource and the contribution the proposed development would make towards Worcestershire's landbank of permitted crushed rock reserves, or to Worcestershire's productive capacity for crushed rock.

Industrial minerals supply

6.34 Industrial mineral working tends to have associated plant and infrastructure which requires significant capital investment and long investment timescales, such as kilns for manufacturing cement, glass or bricks. National policy recognises that long-term investment needs influence landbank requirements for these minerals.

20 Worcestershire County Council (2016) *Worcestershire Local Aggregate Assessment 2016* (using data covering the period up to 31/12/2015), available at www.worcestershire.gov.uk/amr.

21 Worcestershire County Council (2016) *Worcestershire Local Aggregate Assessment 2016* (using data covering the period up to 31/12/2015). There are significant constraints on delivering crushed rock production in Worcestershire (these are outlined in **Chapter 2**) and there has been a lack of interest from mineral developers to work the crushed rock resources in Worcestershire. In the *2016 Local Aggregate Assessment* these were considered to be strong indicators that the 10 year average (0.036 million tonnes) was not a suitable production guideline. Discussions with the West Midlands, East Midlands, South West and South Wales Aggregate Working Parties concluded that Worcestershire's production guideline for crushed rock should be reduced to 0 tonnes. See Worcestershire County Council, 2016, *Minerals Local Plan Background Document - Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*, available at www.worcestershire.gov.uk/mineralsbackground.

22 See **Chapter 2: Portrait of Worcestershire**. See also Worcestershire County Council (2016) *Worcestershire Local Aggregate Assessment 2016*, available at www.worcestershire.gov.uk/amr.

23 The production guideline in the latest Local Aggregates Assessment will be used each year in the *Annual Monitoring Report* to monitor progress against the monitoring indicators in **Chapter 9**. See www.worcestershire.gov.uk/amr.

24 This has been subject to Duty to Cooperate discussions with the Aggregate Working Parties of the West Midlands, South West, South Wales and East Midlands. See Worcestershire County Council (2016) *Minerals Local Plan Background Document - Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*, available at www.worcestershire.gov.uk/mineralsbackground.

Supply of brick clay and clay products

Policy MLP 10: Steady and Adequate Supply of Brick Clay and Clay Products

Contributing to:

Objective 1 Objective 4 Objective 9 Objective 9

Planning permission will be granted for minerals development proposals that will contribute to achieving a steady and adequate supply of brick clay and clay products.

Proposals will be required to demonstrate that the proposed development will contribute to the security of clay supply by:

a) Increasing or maintaining Worcestershire's stock of permitted reserves of brick clay; and/or

b) Enabling Worcestershire's productive capacity for brick clay or clay products to be maintained or enhanced.

Reasoned justification

6.35 Worcestershire plays a significant role in the supply of brick clay and clay products both locally and nationally. Sales of brick clay from Worcestershire are approximately 130,000 tonnes per year.[25] This is adequate to supply levels of demand in Worcestershire and to contribute toward national supply.[26]

Increasing and maintaining stocks of permitted reserves

6.36 There are two clay sites in Worcestershire, each with associated brickworks. National policy[27] requires the Minerals Local Plan to provide for a stock of permitted reserves of at least 25 years for brick clay to support the level of actual and proposed investment required for new or existing plant and the maintenance of existing plant and equipment. Each of the clay workings in Worcestershire has stocks of permitted reserves that exceed 25 years and together these mean that Worcestershire has a stock of permitted reserves of brick clay of approximately 75 years.[28] This is likely to be sufficient to supply Worcestershire's two existing brickworks over the life of the plan. As such, **Policy MLP 10** enables brick clay development to come forward but does not set supply targets or delivery milestones.

6.37 There are hundreds of different types of brick and clay products on the market with different colours, finishes and technical specifications. Producing these can require the blending of clays from a number of sources to obtain the durability or colours and textures demanded. Both of the sites in Worcestershire work clay from the Mercia Mudstone Group. Whilst there are a number of different geological formations within the Mercia Mudstone Group, the proximity of the two existing sites in Worcestershire means they are likely to provide very similar clay resources. Proposals may be put forward to provide different types of clay to support existing or new sites within or beyond the county.

6.38 All planning applications will be expected to contain a level of detail proportionate to the proposal submitted, with sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource and the contribution the proposed development would make towards Worcestershire's stock of permitted reserves for brick clay.

Enabling productive capacity to be maintained or enhanced

6.39 In addition to maintaining a stock of permitted reserves, the Minerals Planning Authority needs to ensure sufficient productive capacity is maintained in the county. Worcestershire's overall productive capacity results from the combined capacity of individual sites to produce, process and sell minerals.

25 10 year average based on Mineral Extract: Great Britain Reports 2002 – 2011, Data for Worcestershire only published for 2011, 2010, 2006.
26 Source: Confidential industry discussion.
27 Department for Communities and Local Government (March 2012) *National Planning Policy Framework*, paragraph 146.
28 Estimated to be 71 years based on correspondence with mineral operator Weinerberger (02.12.2014) or 78 years based on sales average (Mineral Extract: Great Britain Reports 2002 – 2011) and Weinerberger estimate of permitted resource (02.12.2014).

Haul road at New House Farm Quarry, Hartlebury

6.40 A site might have large permitted reserves but the contribution it can make to the steady and adequate annual supply of materials will not be able to exceed its productive capacity. Productive capacity can be directly limited by the throughput capacity of the site's processing plant, or indirectly through measures which seek to limit or mitigate environmental or amenity impacts, such as limiting opening hours or the number of vehicle movements. Clay sites are often extracted periodically rather than continuously throughout the year (known as campaign working) which allows operators to excavate during periods of good weather and stockpile the mineral for use as required, providing greater control over the brickwork's production schedule and plant efficiency. Both of the existing sites and brickworks in Worcestershire are run by the same operator and are in close proximity. The overall security of Worcestershire's productive capacity could therefore be particularly vulnerable to commercial decisions or natural events at any individual site.

6.41 Worcestershire's productive capacity for brick clay or clay products is therefore likely to be maintained or enhanced through a combination of additional sites and more efficient plant, machinery and working practices at existing sites.

6.42 Planning applications will be expected to demonstrate the contribution which the proposed development would make to maintaining or enhancing productive capacity both at the site level and in the wider context. This may include the anticipated throughput and lifespan of a new site, extended working, or new plant, or the anticipated impact of amending planning conditions at existing sites.

Supply of silica sand

Policy MLP 11: Steady and Adequate Supply of Silica Sand

Contributing to:

Objective 1 Objective 6 Objective 12

Planning permission will be granted for minerals development proposals that will contribute to achieving a steady and adequate supply of silica sand for industrial uses.

Proposals will be required to demonstrate that the proposed development will contribute to the security of silica sand supply by:

a) Increasing or maintaining Worcestershire's stock of permitted reserves of silica sand for industrial uses; and/or

b) Enabling Worcestershire's productive capacity for silica sand for industrial uses to be maintained or enhanced.

Reasoned justification

6.43 Worcestershire does not play a significant role in the supply of silica sand for industrial uses. Sales of silica sand from the county of around 3,000 tonnes per annum[29] account for less than 1% of national supply of foundry sand.[30]

Increasing and maintaining stocks of permitted reserves

6.44 National policy[31] requires the Minerals Local Plan to provide for a stock of permitted reserves of at least 10 years for individual silica sand sites to support the level of actual and proposed investment required for new or existing plant and the maintenance and improvement of existing plant and equipment. In Worcestershire, silica sand is worked at two sites. At both of these sites it is as an ancillary activity to the working of aggregate sand. The sites do not have industrial plant directly associated with them and instead supply small individual foundries and other users and there is no indication that the operators of the current sites wish to invest in industrial plant to use silica sand.[32]

6.45 The stocks of permitted reserves of silica sand at Worcestershire's existing sites are likely to be sufficient for the life of the plan.[33] As such, **Policy MLP 11** enables silica sand development to come forward but does not set supply targets or delivery milestones.

6.46 All planning applications will be expected to contain a level of detail proportionate to the proposal submitted, with sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource and the contribution the proposed development would make towards Worcestershire's stock of permitted reserves of silica sand for industrial uses.

Enabling productive capacity to be maintained or enhanced

6.47 In addition to maintaining a stock of permitted reserves, the Minerals Planning Authority needs to enable sufficient productive capacity to be maintained in the county. Worcestershire's overall productive capacity results from the combined capacity of individual sites to produce, process and sell minerals.

6.48 A site might have large permitted reserves but the contribution it can make to the steady and adequate annual supply of materials will not be able to exceed its productive capacity. Productive capacity can be directly limited by the throughput capacity of the site's processing plant, or indirectly through measures which seek to limit or mitigate environmental or amenity impacts, such as limiting opening hours or the number of vehicle movements. Silica sand for industrial uses in Worcestershire is extracted alongside sand and gravel for aggregate uses. Stockpiling silica sand as it is encountered at such sites will enable the mineral to be available for sale for industrial purposes as required. With relatively few active sites, the overall security of Worcestershire's productive capacity could be put at risk by commercial decisions or natural events at any individual site.

6.49 Worcestershire's productive capacity for silica sand for industrial uses is likely to be maintained or enhanced through a combination of additional sites, stockpiling of silica sand where it is worked alongside aggregate sand and gravel, and more efficient plant, machinery and working practices at existing sites.

6.50 Planning applications will be expected to demonstrate the contribution which the proposed development would make to maintaining or enhancing productive capacity both at the site level and in the wider context. This may include the anticipated throughput and lifespan of a new site, extended working, or new plant, or the anticipated impact of amending planning conditions at existing sites.

Solid sands worked at Wildmoor Quarry, Near Bromsgrove

29 10 year average based on data in Department for Communities and Local Government *Mineral extraction in Great Britain, Business Monitor PA1007* (Table 1 – Industrial sand) [Years 2002-2011]
30 There is no data available regarding the sale of silica sand from Worcestershire for other uses.
31 Department for Communities and Local Government (March 2012) *National Planning Policy Framework*, paragraph 146.
32 Worcestershire County Council (2015) *Minerals Local Plan Background Document: Silica Sand in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.
33 The available data cannot be published due to long-standing confidentially arrangements agreed between the mineral industry and government to protect operators' commercial interests. This means that sales data will not be released or published where there are fewer than 3 operational sites in an area unless express permission is given by the operators affected. See Worcestershire County Council (2015) *Minerals Local Plan Background Document: Silica Sand in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.

Broadway Quarry, near Fish Hill

Building stone supply[34]

Policy MLP 12: Adequate and Diverse Supply of Building Stone

Contributing to:

Objective 1 Objective 5 Objective 9 Objective 11 Objective 12

Planning permission will be granted for minerals development that will contribute to achieving an adequate and diverse supply of building stone.

Proposals will be required to demonstrate that the proposed development will contribute to building stone supply by:

a) Increasing or maintaining Worcestershire's stock of permitted reserves of building stone; and/or

b) Enabling Worcestershire's productive capacity for different types of building stone to be maintained or enhanced.

Reasoned justification

6.51 Worcestershire does not play a significant role in the supply of building stone but it is anticipated that demand may arise for building stone resources during the life of the plan for the repair and maintenance of historic buildings and structures, maintaining vernacular styles in new construction and for contemporary design requirements for new buildings.[35]

Increasing and maintaining stocks of permitted reserves

6.52 There are no active building stone sites in Worcestershire. Building stone was last worked in the county as an ancillary activity to the working of crushed rock at Broadway Quarry near Fish Hill where working ceased in 2010. No planning applications have ever been made for a dedicated building stone quarry in Worcestershire and no sites have been put forwarding during the development of the Minerals Local Plan.

34 For the purpose of this document, the term "building stone" incorporates building, walling, roofing and dimension stones.

35 Worcestershire County Council (2015) *Minerals Local Plan Background Document: Building Stone in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.

6.53 Although demand may arise for building stone resources during the life of the plan, it is not possible to quantify this potential demand. As such, **Policy MLP 12** does not set supply targets or delivery milestones but enables minerals development which would increase or maintain the diversity and quantity of Worcestershire's stock of permitted reserves for different types of building stones. This might include proposals to produce building stone alongside other types of mineral such as crushed rock aggregate, or proposals to supply a specific type of building stone to meet an identified local and national need for a specific material.

Broadway Village

6.54 There can be significant variations in the appearance and characteristics of building stone, even within the same broad stone type. Having a diverse stock of permitted reserves would enable industry to be responsive to the intermittent nature of demand for specific building stones. A relatively small stock of permitted reserves may be all that is required for the adequate supply of each type of material. It should be noted that this intermittent demand may lead to stocks of permitted reserves remaining dormant for some time. This will need to be managed in accordance with the policies in **Chapter 7**.

6.55 All planning applications will be expected to contain a level of detail proportionate to the proposal submitted, with sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource and the contribution the proposed development would make to the adequate and diverse supply of building stone in Worcestershire.

Enabling productive capacity to be maintained or enhanced

6.56 In addition to maintaining a stock of permitted reserves, the Minerals Planning Authority needs to enable sufficient productive capacity to be maintained in the county. Worcestershire's overall productive capacity results from the combined capacity of individual sites to produce, process and sell minerals.

6.57 A site might have large permitted reserves but the contribution it can make to the steady and adequate annual supply of materials will not be able to exceed its productive capacity. Productive capacity can be directly limited by the throughput capacity of the site's processing plant, or indirectly through measures which seek to limit or mitigate environmental or amenity impacts, such as limiting opening hours or the number of vehicle movements. For building stone, the productive capacity for each type of stone is likely to be a more important factor than the overall productive capacity for building stone in general due to the significant variations in the type and use of materials from individual sites.

6.58 Worcestershire's productive capacity for building stone is likely to be maintained or enhanced through a combination of new sites, stockpiling of building stone as it arises from ground works or the demolition of existing structures, and more efficient plant, machinery and working practices over the life of any sites which are developed.

6.59 Planning applications will be expected to demonstrate the contribution which the proposed development would make to maintaining or enhancing productive capacity for the particular type of building stone at the site level and in the wider context. This may include the anticipated throughput and lifespan of a new site, extended working, or new plant, or the anticipated impact of amending planning conditions at existing sites.

Evesham Abbey

Supply of other locally and nationally important industrial minerals

Policy MLP 13: Supply of Other Locally and Nationally Important Industrial Minerals

Contributing to:

Objective 1 Objective 6 Objective 9 Objective 12

Planning permission will be granted for minerals development that will contribute to the sustainable supply of other locally and nationally important industrial mineral resources.

Proposals will be required to demonstrate that the proposed development would meet a local or national need.

Reasoned justification

6.60 Other mineral deposits exist within Worcestershire, such as Halite (salt) and clays which are not currently used for brickmaking in the county. These minerals are not considered to be of local or national importance and as such the Minerals Local Plan does not set supply targets or delivery milestones for them.

Demonstrating local or national need for a mineral resource

6.61 **Policy MLP 13** enables the sustainable supply of other types of industrial mineral to take place should any other locally or nationally important industrial minerals be discovered in the county, or the need or uses for known deposits mean that they become locally or nationally important during the life of the plan.

6.62 Planning applications will be expected to contain a level of detail proportionate to the proposal submitted, with sufficiently detailed market information to demonstrate that the need for the mineral resource is sufficient for it to be considered of local or national importance, and sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource would be capable of meeting the identified need.

Strategic infrastructure development: Hoobrook, Kidderminster

Energy minerals supply

Policy MLP 14: Supply of Energy Minerals

Contributing to:

Objective 6 Objective 9 Objective 12

a) Planning permission will not be granted for the extraction of coal or related development unless it is demonstrated that the proposed development will contribute to the sustainable supply of energy minerals.

b) Planning permission will be granted for on-shore oil and gas development using either conventional or unconventional methods within areas licensed for oil and gas exploration or production where it will contribute to the sustainable supply of energy minerals. Proposals will be required to:

i) clearly distinguish between exploration, appraisal and production phases; and

ii) address constraints on production and processing; and

iii) demonstrate that the proposed development will contribute to the sustainable supply of energy minerals.

Reasoned justification

6.63 There are no known locally or nationally important energy mineral deposits within Worcestershire. As such, the Minerals Local Plan does not set supply targets or delivery milestones for them.

Coal

6.64 Coal deposits exist in Worcestershire, but these are not considered by the Coal Authority to be a commercially viable resource.[36] National policy is also clear that planning permission should not be given for the extraction of coal unless the proposal is environmentally acceptable, or can be made so by planning conditions or obligations; or if not, it provides national, local or community benefits which clearly outweigh the likely impacts to justify the grant of planning permission.

6.65 **Policy MLP 14** does not seek to enable coal extraction, but should any planning applications be put forward, they will be expected to contain a level of detail proportionate to the proposal submitted, with sufficiently detailed information to justify how the proposed development would contribute to the sustainable supply of energy minerals when considered against the tests of national policy and the Development Plan as a whole.

Oil and gas

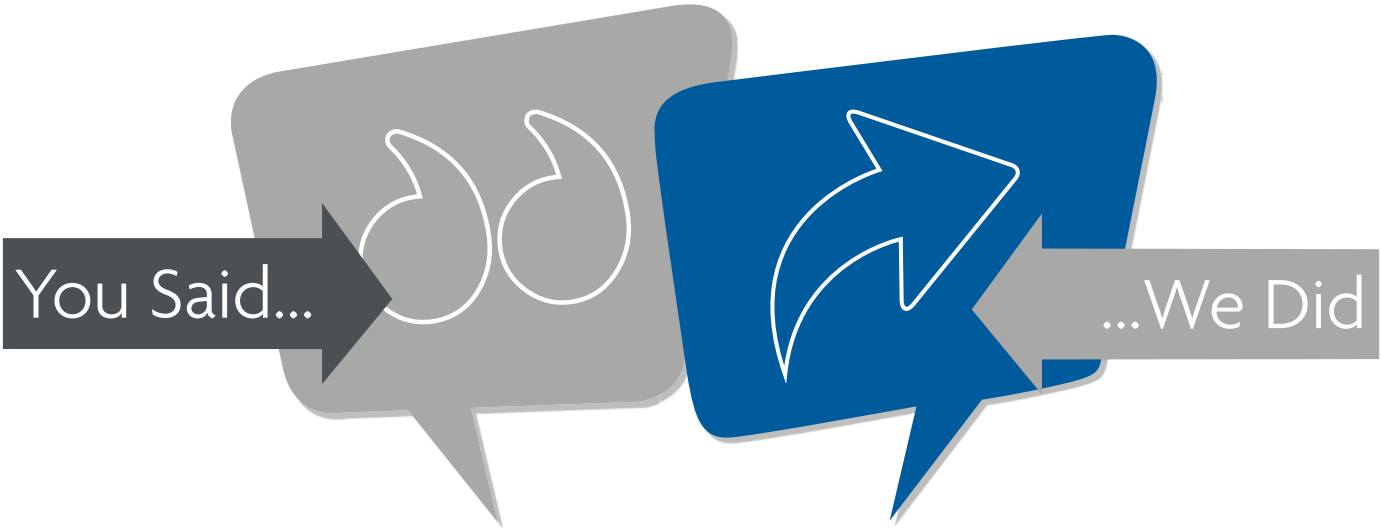
6.66 There are no known oil or gas deposits in Worcestershire and no blocks were licensed in or near to Worcestershire under the government's 14th Onshore Oil and Gas Licensing Round.[37]

6.67 **Policy MLP 14** would only enable on-shore oil and gas development should resources be discovered in the county and licenced under future Onshore Oil and Gas Licensing Rounds. This is considered to be highly unlikely during the life of the plan, but should any proposals be put forward, planning applications will be expected to contain a level of detail proportionate to the proposal submitted. This should distinguish between exploration, appraisal and production phases, demonstrate that any constraints on production and processing will be satisfactorily addressed, and provide sufficiently detailed information to justify how the proposed development would contribute to the sustainable supply of energy minerals when considered against the tests of national policy and the Development Plan as a whole.

36 The Coal Authority's interactive maps show that there are no surface coal resource areas in Worcestershire, http://mapapps2.bgs.ac.uk/coalauthority/home.html.

37 Information about the Onshore Oil and Gas Licencing Rounds is available at https://www.gov.uk/guidance/oil-and-gas-licensing-rounds.

Developing the Third Stage Consultation



The policies for the steady and adequate supply of mineral resources in this *Third Stage Consultation* have been developed taking account of the comments received in response to the *Second Stage Consultation on the Minerals Local Plan,*[38] the *Initial Sustainability Appraisal,*[39] national and local planning policy and best practice.

The *Second Stage Consultation on the Minerals Local Plan* included two chapters addressing how much mineral resource the plan would make provision for, when minerals would be worked and when Worcestershire's reserves would meet national targets, addressing different types of mineral resources separately.

Aggregates

The *Second Stage Consultation on the Minerals Local Plan* was based on Worcestershire's *2013 Local Aggregate Assessment*[40] which set out a two-phase method for calculating the provision required:

- **Up to and including 2016**: Using the annual "apportionment" agreed by the West Midlands Mineral Planning Authorities based on the share of past sales for each area; and
- **Beyond 2016**: Provision requirements for the remainder of the plan period would be based on a rolling average of annual sales levels in Worcestershire in the last 10 years, updated on an annual basis.

These methods were used to calculate the minimum cumulative level of provision that should be made in the Minerals Local Plan to ensure that annual supply would be adequate. The *Initial Sustainability Appraisal*[41] suggested that the simplest approach, for plan making and for interpretation by applicants and others, would be to adopt the 10 years' sales averages as the defining measure throughout the entire plan period. This would have the benefit of avoiding two different calculations and accommodating the changes in provision that arise accordingly. However, some responses, particularly from the minerals industry, questioned the validity and robustness of the 2013 Local Aggregates Assessment and its reliance on the 10 year sales average without sufficient consideration of "other relevant local information" as it was likely to have been skewed by the economic recession.

The *Second Stage Consultation on the Minerals Local Plan* suggested that these annual levels should be delivered consistently during the plan-period, whilst also building up enough reserves to meet landbank requirements. Three alternative approaches to addressing the shortfall in Worcestershire's aggregate landbanks were proposed:

38 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".

39 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

40 Worcestershire County Council (June 2013) *Local Aggregates Assessment* is available at **http://www.worcestershire.gov.uk/downloads/file/487/the_local_aggregates_assessment_for_worcestershire_-_june_2013**

41 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

a) Assume there is no permitted landbank at the start of the plan period

b) Assume that the shortfall in landbank continues at current (published) levels

c) Assume there is no shortfall in landbank at the start of the plan period

The consultation document expressed support for option a). Some responses agreed with the use of option a), stating that it was the option most likely to avoid under provision, but some disagreed with the use of option a) as it would ignore the fact that the some landbank may be in existence when the plan is adopted. Some responses, as well as the *Initial Sustainability Appraisal*[42] indicated that different approaches may be required for sand and gravel (likely to have some landbank) and crushed rock (unlikely to have landbank).

Responses also suggested that the Plan needed to be realistic about the prospects for provision of crushed rock to reflect the constraints on those resources, and that the Mineral Planning Authority (MPA) would need to cooperate with other MPAs such as by negotiating a higher level of crushed rock provision elsewhere, in order to allow for a reduced level of crushed rock provision in Worcestershire.

These comments have been taken into account in developing this *Third Stage Consultation*. The Minerals Planning Authority has fully revised it approach to its Local Aggregate Assessment methodology and has published Worcestershire's *2016 Local Aggregate Assessment*[43] based in this revised approach. The changes in approach were made to recognise the constraints on Worcestershire's crushed rock resources, changes in national policy and guidance since the 2013 methodology was proposed and the other concerns expressed about the methodology. Significant discussion has been undertaken with the West Midlands and surrounding Aggregate Working Parties[44] when developing the revised methodology, which addresses sand and gravel and crushed rock individually.

Worcestershire's *2016 Local Aggregate Assessment*[45] provides a sound baseline for the balance of demand and supply of aggregates in Worcestershire and has been used as the basis for the *Third Stage Consultation* and as such the *Third Stage Consultation* considers the requirements for the steady and adequate supply of sand and gravel separately from the requirements for crushed rock.

The *Second Stage Consultation on the Minerals Local Plan* also put forward three alternative approaches to setting milestones to achieve the landbank targets:

a) Aim for permitted reserves that will provide a minimum 7 year landbank for sand and gravel and 10 year landbank for crushed rock throughout the plan period

b) Aim for permitted reserves that will provide a minimum 7 year landbank for sand and gravel and 10 year landbank for crushed rock by halfway through the plan period

c) Aim for permitted reserves that will provide a minimum 7 year landbank for sand and gravel and 10 year landbank for crushed rock by the end of the plan period

The Mineral Planning Authority expressed a preference for option b) as it was considered to achieve the best balance between an ambitious and a deliverable approach. An equal number of responses agreed and disagreed with option b) being used as the preferred option and basis for the vision. Some written responses suggested that whilst option b) was sensible in terms of trying to meet the requirements outlined in national policy and giving a realistic timeframe to achieve the delivery of the required landbank, it should not lessen the impetus to try and achieve the landbank reserves sooner. Others suggested that full provision should be aimed for throughout the plan period, preferably with the allocation of specific sites at the beginning and falling back on areas of search towards the end of the plan period if necessary.

The *Initial Sustainability Appraisal*[46] stated that option b) suggested a lack of urgency, and that calling for reserves to be met as soon as possible may be more encouraging. It also questioned whether the identification of "areas of search" as proposed in the *Second Stage Consultation* would provide sufficient impetus to meet the proposed time frame, and suggested that a proactive approach of identifying specific sites would be useful.

42 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

43 See Worcestershire County Council (2016) *Local Aggregates Assessment 2016* at **www.worcestershire.gov.uk/amr**

44 See Worcestershire County Council (2016) *Minerals Local Plan Background Document - Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*, available at **www.worcestershire.gov.uk/mineralsbackground**

45 See Worcestershire County Council (2016) *Local Aggregates Assessment 2016* at **www.worcestershire.gov.uk/amr**

46 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

These comments have been taken into account in developing this *Third Stage Consultation*. The document still suggests two phases to achieving a 7 year landbank but the phasing proposed to achieve the required landbank for sand and gravel is positively phrased, so that the 7 year landbank should still be achieved by no later than halfway through the plan period and should be achieved as quickly as possible. To ensure the plan gives the greatest possible impetus to achieve this, two "calls for sites" were conducted during summer 2014 and summer 2015, resulting in specific sites and preferred areas being allocated in addition to the identification of strategic corridors.

A number of consultation responses objected to the inclusion of references to two planning applications which were outstanding at the time of the *Second Stage Consultation* at Holdfast and Strensham. Whilst the consultation document did not rely on the proposed schemes which had not yet been determined, reference to the applications was included to give some indication of what the minerals industry was trying to bring forward in Worcestershire to indicate the level of impact the applications could have on the landbank if they were to be permitted. Although this was intended to be helpful, it was recognised that this caused some ambiguity. The *Third Stage Consultation* therefore uses only the data which was available for the 2016 Local Aggregates Assessment (data up to 31st December 2015) as its baseline and does not rely on any planning applications which were still to be determined at that date. This means that the *Third Stage Consultation* includes sites in its allocations that were submitted for consideration during the development of the plan but have been granted planning permission during 2016. The contribution from these sites will be incorporated in future Local Aggregates Assessment and in monitoring the implementation of the plan.

With regard to secondary and recycled aggregates, the *Second Stage Consultation* stated that "Provision is addressed through the Waste Core Strategy and is monitored through the Annual Monitoring Report under the Waste Core Strategy monitoring indicators. This strategy seeks to achieve enough capacity to recycle 75% of construction and demolition waste." [47] Some responses suggested that targets should be set for secondary and recycled aggregates to reduce the demand for primary aggregates, and the *Initial Sustainability Appraisal*[48] suggested that an explicit, positive approach to secondary and recycled aggregates in the Minerals Local Plan would help to strengthen resource efficiency. The updated methodology used in Worcestershire's *2016 Local Aggregate Assessment* considers substitute, secondary and recycled materials and the potential to increase contribution from secondary and recycled materials before considering the amount of primary materials required. The policies in this *Third Stage Consultation* have been developed to encourage the use of substitute, secondary and recycled materials and mineral wastes to minimise the requirement for all types of primary mineral resources, not just aggregates. However, there is very little data available.

Industrial and energy minerals

The *Second Stage Consultation on the Minerals Local Plan* set out the reasons that milestones for the provision of non-aggregate minerals would not be identified and stated that phasing provision for industrial and energy minerals across the life of the Minerals Local Plan was not considered relevant:

- **Building stone**: "We don't have any evidence on the viability of the resources but we will develop policies to assess individual applications"[49]

  The Herefordshire and Worcestershire Earth Heritage Trust highlighted that their Heritage Lottery Funded project "*A Thousand Years of Building with Stone*" was researching the types of stone used in the county and trying to identify the quarries from which they came with the aim of increasing local interest and awareness of the use of local stone for building. This project has been taken into account in developing this *Third Stage Consultation* but does not provide a basis for identifying milestones for building stone provision.

- **Clay**: "There is currently a 37 year landbank for clay in Worcestershire. The National Planning Policy Framework does not set out a requirement for provision to be made by planning policy. We think that as this landbank extends more than 10 years beyond the plan-period it is not necessary to set provision milestones. However, in order not to stifle competition and long-term sustainability of supply we will develop policies to assess individual applications"[50]

  No comments were made on clay in response to the consultation.

47 Worcestershire County Council (2013) *Second Stage Consultation on the Minerals Local Plan*
48 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
49 Worcestershire County Council (2013) *Second Stage Consultation on the Minerals Local Plan*
50 Worcestershire County Council (2013) *Second Stage Consultation on the Minerals Local Plan*

- **Coal**: "We don't think the resources are viable but we will develop policies to assess individual applications"[51]

  The Coal Authority acknowledged that coal resources are limited within Worcestershire, and had no additional evidence to demonstrate future demand. There is no evidence to change the proposed stance and the policies in this *Third Stage Consultation* have been developed to reflect national policy requirements.

- **Hydrocarbons**: conventional (oil and gas) and unconventional (shale gas) hydrocarbons: "We don't think the resources are viable, but pending national policy guidance we will develop policies to assess individual applications"[52]

  One response stated that there was little evidence in the *Second Stage Consultation document* to dismiss the potential for shale gas extraction (using 'fracking') in such a minimal fashion. A background document on oil and gas has since been developed and published,[53] and the government's 14th Onshore Oil and Gas Licensing Round has been concluded without any licenced areas in Worcestershire.[54] The policies in this *Third Stage Consultation* have been developed to reflect national policy requirements.

- **Salt and brine**: "We don't think the resources are viable but we will develop policies to assess individual applications"[55]

  No comments were received which would provide a basis for identifying milestones for salt and brine and there is no evidence to change the proposed stance.

- **Silica sand**: "We don't have any evidence for setting a required level of provision for this mineral and we will develop policies to assess individual applications" [56]

  One response stated that silica sand has not been used as an industrial material for a considerable time and that it should not be classified separately as an industrial material.

  The *Initial Sustainability Appraisal*[57] suggested that further explanation was required as to why average sales tonnages over the last 10 years of sand for non-aggregate purposes (practically equivalent to silica sand) could not be used to determine 'need'. A background document on silica sand has since been developed and published[58] which considers the available data on silica sand sales. The policies in this *Third Stage Consultation* have been developed to reflect this alongside national policy requirements.

The *Second Stage Consultation* asked whether there were any other minerals which should be considered. No other minerals were suggested, but the need to acknowledge imports and exports of minerals was raised, suggesting that the Minerals Local Plan should include assumptions on the level of sand and gravel and crushed rock that will come from imports outside the county and the likely levels to be exported. A summary of aggregate imports and exports is set out in **Chapter 2 (Portrait of Worcestershire)**. Consideration of imports and exports also informs the production guidelines in the *2016 Local Aggregate Assessment*.[59]

51 Worcestershire County Council (2013) *Second Stage Consultation on the Minerals Local Plan*
52 Worcestershire County Council (2013) *Second Stage Consultation on the Minerals Local Plan*
53 Worcestershire County Council (2015) *Worcestershire Minerals Local Plan Background Document: Conventional and Unconventional Hydrocarbons (Oil and Gas; excluding Coal)* available at **www.worcestershire.gov.uk/mineralsbackground**
54 Information about the Onshore Oil and Gas Licencing Rounds is available at **https://www.gov.uk/guidance/oil-and-gas-licensing-rounds**
55 Worcestershire County Council (2013) *Second Stage Consultation on the Minerals Local Plan*
56 Worcestershire County Council (2013) *Second Stage Consultation on the Minerals Local Plan*
57 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**
58 Worcestershire County Council (2015) *Worcestershire Minerals Local Plan Background Document: Silica Sand in Worcestershire* available at **www.worcestershire.gov.uk/mineralsbackground**
59 See Worcestershire County Council (2016) *Local Aggregates Assessment 2016* at **www.worcestershire.gov.uk/amr**

Third Stage Consultation on the Minerals Local Plan: Consultation Questions

Q6.1 Contribution of substitute, secondary and recycled materials and mineral wastes to overall minerals supply

a. Does Policy MLP 7 provide an appropriate and justified approach to the contribution of substitute, secondary and recycled materials and mineral wastes to overall minerals supply?

b. Does Policy MLP 7 and the reasoned justification contribute towards the achievement of the Vision, Objectives and Spatial Strategy?

c. Does Policy MLP 7 and the reasoned justification provide sufficient clarity as to how the policy would be applied?

Q6.2 Aggregate supply

a. Do Policies MLP 8 and MLP 9 provide an appropriate and justified approach to the steady and adequate supply of aggregates?

b. Do you agree with the proposed phasing for increasing and maintaining the sand and gravel landbank?

c. Do Policies MLP 8 and MLP 9 and the reasoned justification contribute towards the achievement of the Vision, Objectives and Spatial Strategy?

d. Do Policies MLP 8 and MLP 9 and the reasoned justification provide sufficient clarity as to how the policies would be applied?

Q6.3 Industrial minerals supply

a. Do Policies MLP 10, 11, 12 and 13 provide an appropriate and justified approach to the steady and adequate supply of industrial minerals?

b. Do Policies MLP 10, 11, 12 and 13 and the reasoned justification contribute towards the achievement of the Vision, Objectives and Spatial Strategy?

c. Do Policies MLP 10, 11, 12 and 13 and the reasoned justification provide sufficient clarity as to how the policies would be applied?

Q6.4 Energy minerals supply

a. Does Policy MLP 14 provide an appropriate and justified approach to the sustainable supply of energy minerals?

b. Does Policy MLP 14 and the reasoned justification contribute towards the achievement of the Vision, Objectives and Spatial Strategy?

c. Does Policy MLP 14 and the reasoned justification provide sufficient clarity as to how the policy would be applied?

Machinery at Church Farm East sand and gravel working near Grimley

7. Development management

Introduction

Development proposals

7.1 Earlier in the Minerals Local Plan, policies set a strategic direction for minerals development addressing where future mineral development will be concentrated, how much mineral is required and when it should be worked provide positive direction to enable new mineral working to come forward in the right place at the right time. The policies in this development management section seek to protect and enhance local features, assets and receptors; they provide the balance for decision making.

7.2 The Minerals Local Plan should be read as a whole, and should be considered alongside Local Plans as prepared by the City, Borough and District Councils within Worcestershire, the Waste Core Strategy and adopted Neighbourhood Plans as relevant to the site and proposal.

7.3 It is expected that all planning applications will be prepared using robust, up-to-date information based on the local context and knowledge and evidence available at the time.

7.4 Local strategies, objectives and information are available from Worcestershire County Council and other appropriate sources, such as the Environment Agency, Natural England, Historic England, Wildlife Trusts and the Herefordshire and Worcestershire Earth Heritage Trust. These references will be a useful resource in preparing and considering minerals development proposals. Material considerations such as these will be addressed as relevant in determining applications.

7.5 Applications may need to be subject to formal assessment through processes including Environmental Impact Assessment, Transport Assessment and Flood Risk Assessment. Where these formal assessments are not required, planning applications should still be subject to an appropriate level of technical assessment, addressing relevant topics, so that the reasonably likely outcomes of the development can be properly considered.[1]

1 For further information refer to Worcestershire County Council's *Planning Validation Document*, available at http://www.worcestershire.gov.uk/info/20014/planning/1090/planning_validation_document.

7.6 A test of "unacceptable adverse impact" is generally stated within the development management policies. This test will be applied as appropriate for each policy topic, (for example: significant harm for heritage assets; likely significant effect for European sites) incorporating the advice of the *National Planning Policy Framework*, legislative requirements and other material considerations.

7.7 The policy remit of the Minerals Local Plan is the administrative area of Worcestershire. It is recognised that even where applications do not cross the county boundary, a development's impacts may be felt further afield. Applications should make clear the physical extent of impacts (both positive and negative) as well as their significance. Net gain that extends beyond the county boundary is welcomed and will be considered favourably.

7.8 The development management policies are relevant to both designated and non-designated assets. Non-designated assets are important for supporting designated assets and for underpinning the quality of green infrastructure networks across Worcestershire; they may also be locally significant in themselves.

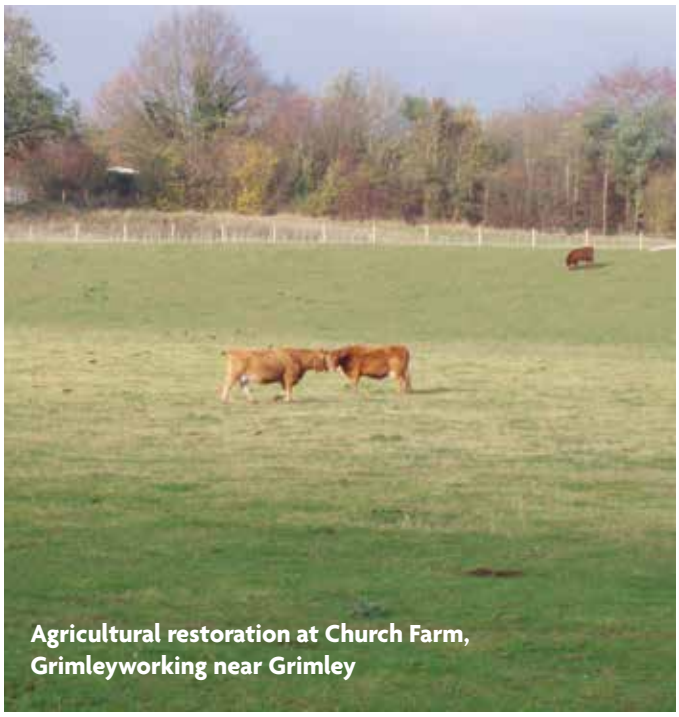
7.9 The Mineral Planning Authority pursues a strategic approach to sustainable development, recognising that successful delivery requires integration across a range of matters. Sustainable development will be facilitated through the application of all the policies in the Minerals Local Plan, which will be used as the basis for decision making. The development management policies are presented in the following topic groupings:

- Design of development;
- Amenity and well-being;
- Natural and historic environment;
- Transport; and
- Sustainable development delivery.

Planning conditions

7.10 Planning conditions are an integral part of a planning permission. They are used to control and manage specific details about the proposal and to ensure the effects on local people, businesses and the environment are kept within acceptable levels. They must be referenced to relevant development plan policy. Planning obligations will be required when conditions are not capable of achieving an acceptable outcome, but a solution is available by legal agreement.

7.11 Monitoring and enforcement is carried out by the Mineral Planning Authority to ensure compliance with planning conditions or to address development that is occurring without planning permission. Any enforcement actions are also subject to the policies contained within this Minerals Local Plan, the Development Plan and other material considerations.



Agricultural restoration at Church Farm, Grimleyworking near Grimley

Review of mineral permissions

7.12 The legislative requirements of the *Planning and Compensation Act 1991* and the *Environment Act 1995* enable the review of mineral permissions, commonly referred to as ROMP. The ROMP provides an opportunity for the Mineral Planning Authority to ensure mineral sites continue to work under modern conditions that reflect sustainability aspirations and offer appropriate environmental protection. Subject to certain legal provisions, the ROMP determination process is conducted in a similar way to the processing of a planning application. The Minerals Local Plan and other material considerations will apply in determining ROMP. However, ROMP applications cannot be refused, and compensation liabilities can arise if working rights are unreasonably affected.

Pre-application consultation

7.13 Good consultation and community engagement is an important element of sustainable development.

7.14 The Mineral Planning Authority offers a pre-application advice service to assist with this at an early stage. Developers are encouraged to use this service.

7.15 Applicants are encouraged to engage in pre-application consultation with statutory consultees, local communities and interest groups. The Mineral Planning Authority strongly believes such engagement can be very constructive, helping to avoid misinformation, address fears, and allow suggested changes to be incorporated in the final submitted application. The *Statement of Community Involvement* provides information on how consultation on planning applications should be carried out, and the Mineral Planning Authority expects this to be followed.[2]

7.16 Pre-application advice is useful to the developer as it can:

- help issues to be resolved at an early stage through the provision of advice in a timely manner;
- avoid unnecessary delays and costs by making sure that the right information is provided, particularly where there is a need for formal assessments, such as an Habitats Regulations Assessment, Health Impact Assessment or Hydrogeological Impact Assessment;
- provide the Mineral Planning Authority with the opportunity to highlight other consents that may be required and statutory consultees that developers should liaise with at an early stage; and
- enable a more sustainable proposal to be submitted.

7.17 The Mineral Planning Authority strongly encourages ongoing community engagement through liaison committees during the lifetime of a minerals site. Liaison committees can be effective in keeping local communities informed about operations on-site and to address any issues arising in a positive and constructive manner. Opportunities for open days or pre-arranged site visits should be considered and provided where possible.

Kemerton Lake Nature reserve at former sand and gravel working

Design of development

7.18 In preparing an application it is important to look at the whole life of the proposed mineral working, identifying and integrating opportunities to deliver a positive legacy from the outset. The development management policies are relevant to all phases of the winning and working of minerals, from surveying resources through to restoration and aftercare.

7.19 In considering matters in relation to the winning and working of minerals, the Mineral Planning Authority will take a positive approach and implement a presumption in favour of sustainable development. These design policies are concerned with ensuring that sustainability is achieved both in the early design and long term legacy of a mineral development proposal.

7.20 Good design is not just about aesthetics. It is a key aspect of sustainable development. It requires full consideration of the surrounding environment, its constraints and the opportunities for enhancement. A comprehensive approach, addressing operations, buildings and machinery, people and place, across the lifetime of the site and through its aftercare, will enable sustainable development to be realised.

7.21 The Mineral Planning Authority welcomes outstanding and innovative design[3] that enhances the area and responds positively to local priorities.

2 http://www.worcestershire.gov.uk/sci.

3 In 2015, one of Worcestershire County Council's elected Councillors and Cabinet Members, Cllr Mrs Blagg, sponsored a competition to encourage innovative proposals for how sand and gravel pits could be restored and subsequently used. All the entries are available to view as inspiration for future minerals development restoration and after-use schemes at www.worcestershire.gov.uk/quarrycompetition. However, they should not be interpreted as schemes which the County Council in its role as Mineral Planning Authority endorses, and all planning applications will be considered on their own merits.

Policy MLP 15: Sustainable Design Principles

Contributing to:

Objective 1 Objective 3 Objective 4 Objective 5 Objective 6 Objective 8 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted for mineral development proposals that will improve the economic, social and environmental conditions in the county and are demonstrated to:

a) **contribute towards the delivery of the Spatial Strategy; and**

b) **deliver integrated and multifunctional green infrastructure; and**

c) **take account of local context; and**

d) **be resilient to climate change; and**

e) **be resource efficient; and**

f) **deliver restoration and after-use at the earliest opportunity, with means to secure it in the long term; and**

g) **not give rise to unacceptable hazards; and**

h) **not result in an unacceptable cumulative impact from other concurrent mineral working or existing or proposed development.**

Processing of sand and gravel, at Ryall House Farm quarry

New House Farm quarry

Reasoned justification

7.22 The potential for benefits and harm to the economic, social and environmental conditions in the county from mineral development should not be taken in isolation; they are interrelated, and each dimension should be considered jointly and simultaneously from surveying resources through to restoration and aftercare.

Delivering the spatial strategy

7.23 The **spatial strategy** identifies five **strategic corridors**, each of which has a distinct character. It outlines priorities for each of the **strategic corridors**, and how mineral development can contribute to delivering these priorities. Taking a landscape-scale approach to considering assets that need to be protected and those that can be enhanced within the framework of these priorities provides a significant opportunity to deliver sustainable development that connects with the local setting, links or extends existing green infrastructure networks and delivers a positive legacy.

7.24 Planning applications will be expected to demonstrate how the identified priorities have informed the design of the proposed development and how they will be delivered at all stages of working, restoration and after-use.

Delivering integrated and multifunctional green infrastructure

7.25 Green infrastructure[4] is a practical way to consider sustainable development. It is a mechanism for delivery, rather than an end in itself, enabling benefits to be realised both locally and beyond. Development proposals will be expected to consider the context of the site with regard to green infrastructure components and networks, both at a landscape scale (see **Chapter 5**) and site scale. The interactive minerals mapping tool can be used as the starting point to inform this on a site-by-site basis.[5]

7.26 Local factors should have a strong influence on site design, for example linkages to existing green infrastructure assets and networks should determine how corridor priorities are delivered and how other green infrastructure factors can be integrated. Whilst it might not be appropriate to address all components on each site, effective schemes will often integrate multiple compatible aspects. The design, working and restoration of the site should be informed by these considerations.

7.27 The delivery of green infrastructure can underpin the realisation of net gain from mineral operations. This can be achieved at any time during the life of the site and should be fully considered during preparation and working phases as well as restoration and after-use. The Mineral Planning Authority will expect all opportunities for green infrastructure to be optimised and delivered throughout the life of the mineral development proposed.

7.28 The need for a sustainable restoration scheme, including a suitable end landform, will need to be considered in balance with the prudent use of mineral resources.

4 Green infrastructure is the network of high quality green and blue spaces and other environmental features that are capable of delivering a wide range of multifunctional benefits.
5 Interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

Taking account of local context

7.29 In addition to being integral to the protection and delivery of green infrastructure, local factors should also have a strong influence on site design with regard to amenity and mitigation considerations. Early consultation will enhance design quality throughout the life of the site. It is expected that developers will consult with local communities and other stakeholders on proposals for mineral development before the planning application is submitted and demonstrate how they have taken account of the views of the community, including businesses, in a Consultation Statement.[6]

River Severn in Flood, Worcester 2014

Climate change resilience

7.30 Climate change is widely recognised as a major environmental issue on a global scale. The Minerals Local Plan has been prepared recognising the impacts of climate change over the longer term, including factors such as flood risk, water supply and changes to biodiversity and landscape. New development should be planned to avoid both contributing to the causes of climate change (see resource efficiency below) and increased vulnerability to the range of impacts arising from climate change.

7.31 The design of development should take account of likely impacts of climate change. In Worcestershire this could include considering the increased probability of flooding events from wetter winters and potential water supply impacts of warmer drier summers. *The Worcestershire Climate Change Strategy 2012 - 2020* outlines the issues that face the county and provides the current framework within which to secure a low carbon and climate resilient county. This strategy will be updated through the lifetime of the Minerals Local Plan and is an important local consideration for mineral development.

7.32 The Mineral Planning Authority will expect actions to enable climate change adaptation and resilience to be incorporated into mineral operations. Climate change resilience can be enhanced through the consideration of habitat networks and opportunities to allow species migration through buffering existing assets and providing stepping stones between them. The restoration of mineral sites also has the potential to contribute to climate change resilience through schemes that offer flood betterment and water storage.

Resource efficiency

Energy and water efficiency

7.33 The winning and working of minerals can require significant use of resources. Washing and processing minerals can be water intensive, with processing, heating and drying of materials and machinery, motors and drives accounting for the majority of energy usage.[7]

7.34 Good site design can help with the management of stockpiles[8] and reducing transport movements around the site. Buildings and plant can be designed to improve energy efficiency and consequently carbon emissions. Utilising low emission vehicles[9] and renewable energy supply[10] where appropriate and ensuring plant, vehicles and conveyors are well maintained and operated in an efficient manner can also significantly reduce energy demands.

7.35 Mineral development will be expected to minimise demand for water resources. For example water can be recirculated within operations to reduce overall demand.

7.36 The Mineral Planning Authority will expect energy and water efficiency measures to be considered and incorporated in plant, buildings and operations. For the operator, resource efficiency and reduced carbon emissions can provide significant cost savings.

6 For further information refer to *Worcestershire County Council's Planning Validation Document*, available at http://www.worcestershire.gov.uk/info/20014/planning/1090/planning_validation_document.
7 https://www.carbontrust.com/resources/guides/sector-based-advice/mining-and-quarrying.
8 Keeping stockpiles drier or allowing natural drying of wet mineral can significantly reduce energy demands for processing and transport.
9 Including non-fossil fuels and electric vehicles.
10 Including solar panels, biofuels, open-loop ground source or surface water source heating and cooling systems.


Mineral conveyor at Clifton sand and gravel working

Mineral resources

7.37 Minerals should be extracted efficiently. Development should propose to extract as much of the mineral resource as possible, whilst avoiding unacceptable harm and ensuring that a high quality of restoration and after-use can be achieved. Soils and overburden should be retained on site for restoration and maintained as part of the green infrastructure of the site throughout operations.

Restoration and after-use at the earliest opportunity

7.38 Planning permission will not be granted for mineral working unless satisfactory proposals have been made for the restoration and after-use of the site. Restoration should take place at the earliest opportunity and should include a means of securing benefits in the long term. This will usually mean phased working and restoration across the site. Developers will be required to justify any proposals that do not include phased restoration.

7.39 Planning applications will be expected to present working and restoration phases as appropriate to the site. Applications should include a long term strategy that will deliver positive results that contribute towards the **spatial strategy** and are appropriate in the local context. In many case this will mean considering impacts on sensitive receptors, natural and historic environmental assets and green infrastructure networks beyond the boundary of the site.

7.40 Long term management beyond the statutory five year aftercare period will be required where appropriate, for example to establish a new habitat or to bring community benefit. Commitment for such provision will be gained through a planning obligation, as set out in **Policy MLP 26**.

Safety in managing hazards

7.41 Sustainable design includes safety for people and places. Mineral development can give rise to a number of hazards to people both on and off site. The planning system seeks to ensure that mineral development proposals are not inherently unsafe. The Mineral Planning Authority will focus on whether the development itself is an acceptable use of the land, and the safety consequences in land use terms, rather than health and safety considerations regulated under other regimes. Investigations and/or assessments may be required to demonstrate that relevant safety matters have been mitigated or appropriately addressed to an acceptable level.

7.42 Appropriate safety measures that can also contribute to the delivery of green infrastructure will be encouraged, for example locally appropriate planting could be used to create natural barriers that prevent access and minimise risk, whilst also contributing positively to local character and distinctiveness of the area, providing additional habitat benefits and reducing adverse visual impact from fencing and signage.


Clifton Quarry, near Worcester

Land instability

7.43 Proposals should demonstrate the measures to be used to ensure that quarry sides and slopes are stable and will not result in landslip, either within the site or on adjoining land, both during and after the lifetime of the development. Stockpiles and mineral waste tips should be constructed and accessed so that they are unlikely to give rise to danger through instability. Using suitable vegetation can assist with stability and bring environmental benefit.

7.44 Unsafe ground conditions can be caused by water movement including changes in groundwater levels through de-watering, and increases in flow velocity at times of flood, which can cause scouring of pit sides, breaches of flood protection measures or erode banks of restored lakes. Good water management will integrate safety and environmental objectives.

7.45 Where there is any likelihood of instability, a stability report should be provided setting out measures appropriate to ensure the continued stability and integrity of infrastructure adjoining or close to the development site. Ensuring stability may require leaving unworked areas or margins within or around the site.

7.46 Overburden, mineral waste materials and any other material or waste to be used in restoration should be placed within the site to ensure that differential settlement does not occur, which could lead to instability in the future.

Subsidence

7.47 Subsidence is a vertical downward movement of the ground caused by the loss of support beneath the surface, and may be due to a number of natural geological hazards. Sand and gravels are susceptible to the fine particles in their composition being washed away if subjected to water flow; and loosely packed sand that sits under the water table acts in a similar way, moving into any void surrounding it. Limestone can be dissolved over time by running water creating voids that can collapse causing swallow holes. Clays can expand and contract with wetting and drying out causing heave and subsidence and rock can become compressed and collapse in on itself. Coal mining legacy features and hazards have been identified in Worcestershire by the Coal Authority,[11] focused in the north west of the county, and may present a constraint on development or provide an opportunity for prior extraction of any remnant surface coal as part of remedial measures to address unstable land.

7.48 Where minerals that are prone to such movement are proposed to be extracted, an investigative assessment should be carried out to ensure the proposed methods for working the site would not result in risk of subsidence within the site or on adjoining land, both during and after the lifetime of the development.

Aviation safety

7.49 Bird strike can cause significant damage to civil aviation and military aircraft. Most bird strikes occur at low altitudes affecting either low flying aircraft or aircraft taking-off or approaching an airfield.

7.50 The process of mineral extraction itself is unlikely to attract bird populations but settlement lagoons, open water bodies and nature reserves or concentrations of berry producing planting associated with the site all have the potential to attract birds. There are statutory aerodrome safeguarding areas[12] in Worcestershire, and there is the possibility that smaller airfields or areas for military exercise fly overs or instruction (for example helicopter training) may be affected by an increased risk of bird strike.

7.51 Proposals for site working, restoration and after-use will be required to consider aviation safety[13] in demonstrating the appropriateness of water management and site restoration schemes.

Restoration to open water

11 These can be viewed on the Coal Authority's interactive map at http://mapapps2.bgs.ac.uk/coalauthority/home.html.

12 13km zone around aerodromes within which the aerodrome operator must be consulted on planning applications with the potential to increase the risk of bird strike.

13 For best practice advice, see Mineral Products Association (2015) *Mineral Sites and Bird Strike Hazard and Risk: Practice Guide for Mineral Development and Restoration within Aerodrome Safeguarding Areas*', available at http://www.mineralproducts.org/documents/MPA_Birdstrike_Guidance_Revised_Version_May_2015.pdf.

Utilities

7.52 A range of utility services may cross a mineral working, either above (for example overhead electricity lines) or below ground (for example gas pipelines). Damage to this infrastructure is unsafe, causing inconvenience and harm to people and property.

7.53 Planning applications should identify all existing and proposed utility services that cross, abut, or are adjacent to the proposed development site. The submitted details should demonstrate how such infrastructure will be protected, to ensure it remains operational and safe.

Cumulative impact

7.54 The Mineral Planning Authority will consider the cumulative effects of multiple impacts from individual sites and/or a number of minerals sites in a locality or other proposed development. These have the potential to achieve optimal benefits or to exacerbate harm to an unacceptable level.

7.55 The consideration of cumulative or in-combination effects can be a legal requirement, for example in Environmental Impact and Habitats Regulations Assessments. Even where this level of assessment is not required, the Mineral Planning Authority expects planning applications to include a proportionate consideration of cumulative impacts. Appropriate measures to optimise benefits and to avoid or mitigate harm should be made clear within the planning application.

Limestone at Broadway Quarry, near Fish Hill

Restored sand and gravel working at Retreat Farm, near Grimley

Amenity and well-being

7.56 Quality of life is affected by a number of factors including improved job opportunities, access to nature and publicly accessible green space and improved conditions for people to live, work, travel and take leisure. Quality of life may also be referred to as amenity, a word often used within planning; the two terms are interchangeable.

7.57 "Minerals are essential to support sustainable economic growth and our quality of life."[14] Mineral workings also have the potential to cause harm. However, with appropriate site design, working methods and mitigation measures in place these impacts can be controlled so that they do not have an adverse impact on people, places and businesses.

7.58 Impacts on amenity and well-being are relevant to businesses, people, places and the natural environment.

Health and quality of life

7.59 Mineral sites can be a significant source of concern to local communities, because of possible disturbance or harmful effects on their living and working environments. The potential for these impacts will vary according to the nature, size, location and duration of the development, and can change over its lifetime.

7.60 Taking local circumstances into account to consider the potential for effects on people, businesses and the natural, built and historic environment will enable mineral workings to respond to the different opportunities for achieving sustainable development.

14 *National Planning Policy Framework, 2012*, paragraph 142

Policy MLP 16: Health and Quality of Life

Contributing to:

Objective 8 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted where it is demonstrated that the proposed mineral development, including associated transport, will not give rise to unacceptable adverse impacts on the health or quality of life of residents, businesses, other sensitive receptors and users of land, either individually or cumulatively with other existing or proposed development.

A level of technical study appropriate to the development proposed will be required to demonstrate that the proposed development avoids harm to sensitive receptors or otherwise reduces it to an acceptable level through appropriate mitigation for matters of:

a) air quality; and

b) dust; and

c) odour; and

d) noise; and

e) vibration; and

f) light; and

g) visual impact; and

h) health and well-being.

Croft Farm Water Park on former mineral working, Bredons Hardwick

Solid sands worked at Wildmoor Quarry, near Bromsgrove

Reasoned justification

7.61 **Policy MLP 16** is applicable to a wide range of sensitive receptors including: people, in homes, schools, places of work and recreation; businesses, including agriculture and tourism; and other users of land, including farm animals. Proposals for minerals development should seek to minimise pollution and other adverse effects

7.62 The method, phasing and lifespan of the workings, the distance of the proposal to receptors and land uses, and the relationship of the site to the locality will influence the nature and levels of impacts that are likely to arise. Consideration of the local context includes natural elements, such as habitats, land levels, gradients and land forms, water courses and water features, as well as manmade structures and infrastructure including roads, railways and waterways.

7.63 Developers are expected to be proactive and monitor impacts and emissions to enable issues to be addressed swiftly. Close liaison with communities can support this approach, enabling feedback and dialogue regarding mitigation measures.

7.64 Mineral working may require an Environmental Permit, the application for which will also include consideration of potential impacts including air quality, noise and dust. The Mineral Planning Authority will focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions where these are subject to approval under pollution control regimes.

7.65 The Mineral Planning Authority will require an appropriate level of technical assessment to be submitted with each application, to address all relevant matters. The assessment should quantify the extent of potential effects arising from the proposal, identify the receptor(s) and demonstrate how each adverse impact would be avoided or managed to an acceptable level. The assessment should consider the effects likely at all stages of development.

7.66 Planning applications should also consider the potential for cumulative impacts to occur. It may be that impacts from an individual proposal would be acceptable, but that the effects of one or more existing or planned developments in the same vicinity could, in-combination, have impacts that would not be acceptable, even after mitigation. Opportunities to maximise positive impacts should be identified and implemented.

Stockpiles of recycled aggregates

Air quality

7.67 Mineral development can impact local air quality through emissions from on-site operations and from vehicle movements, both on and off site. These can be from vehicle and machinery exhaust emissions, and from PM10 particulates[15] released by site processes.

7.68 There are a number of Air Quality Management Areas (AQMA) in and around the county, as well as some areas that are at risk of designation. Reference should be made to the *Worcestershire Air Quality Action Plan*[16] and corresponding action plans of surrounding areas where relevant.

7.69 An air quality assessment, which can include consideration of dust, may be required where a development proposal could interact with:

- an AQMA or potential AQMA;
- sites of national or international importance for nature conservation;
- listed heritage assets, causing damage or soiling; or
- other sensitive receptors, including habitats, near to the potential source.

7.70 Reference should also be made to appropriate advice, this could include:

- Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*;[17]
- Defra (2009) *Local Air Quality Management Technical Guidance*;[18]
- The Institute of Air Quality Management (2011) *Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance*;[19]
- The Institute of Air Quality Management (2012) *Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction-sites*;[20]
- The Institute of Air Quality Management (2015) *Land-Use Planning & Development Control: Planning for Air Quality*.[21]

Dust

7.71 Dust can arise from winning and working processes, such as handling or moving dusty materials, soils or overburden. It can be windblown from stockpiles or dusty surfaces, and can arise from vehicles passing over unpaved ground, or from debris tracked onto the public highway.

7.72 If not properly controlled at source, dust can cause nuisance to people and businesses, and harm through deposition on property, farmland, green spaces and natural and historic elements that make up the network of green infrastructure in the county.

7.73 A dust assessment will be required where fugitive dust emissions are likely to cause nuisance or harm. Atmospheric dispersion modelling may be required to determine whether there is a risk of health effects due to dust emissions. A separate dust assessment is not required where dust is addressed within an air quality assessment and/or health impact assessment.

7.74 Reference should be made to appropriate advice, this could include:

- Institute of Air Quality Management (2011) *Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance*;
- The Institute of Air Quality Management (2012) *Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction-sites*;[22]
- Institute of Air Quality Management (2014) *Guidance on the Assessment of Dust from Demolition and Constructions*;[23]
- Institute of Air Quality Management (2016) *Guidance on the Assessment of Minerals Dust Impacts for Planning*.[24]

15 The fraction of dust linked to environmental damage and adverse health effects.
16 http://worcsregservices.gov.uk/environmental-health/pollution/air-quality.aspx.
17 https://www.gov.uk/search?q=air+quality+strategy.
18 https://www.gov.uk/government/publications/local-air-quality-management-technical-guidance-laqm-tg-09
19 http://iaqm.co.uk/text/guidance/construction_guidance_2011.pdf.
20 http://www.iaqm.co.uk/wp-content/uploads/guidance/monitoring_construction_sites_2012.pdf.
21 http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf.
22 http://www.iaqm.co.uk/wp-content/uploads/guidance/monitoring_construction_sites_2012.pdf.
23 http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf.
24 http://www.iaqm.co.uk/text/guidance/mineralsguidance_2016.pdf.

Clifton sand and gravel working, near Worcester

Odour

7.75 Mineral sites are unlikely to be a source of odour.[25] However, there is potential for odour from water bodies on site such as settlement and silt lagoons or restoration features that are poorly designed or managed such that they become stagnant and odorous.

7.76 The Mineral Planning Authority will expect all planning applications to identify any potential odour sources and to demonstrate how they will be managed effectively. The Environment Agency has issued guidance on odour[26] which contains indicative benchmark levels for use in the assessment of potential impacts from industrial facilities subject to the *Environmental Permitting (England and Wales) Regulations (2010)*. Further useful information may be gained from the Institute of Air Quality Management (2014) *Guidance on the Assessment of Odour for Planning*.[27]

Noise

7.77 There are many potential sources of noise within typical mineral operations. Each might have a different characteristic and intensity, and could be capable of causing significant harm to health and quality of life, including tranquillity, if not properly controlled. After-uses also have potential to introduce or alter the source, type or level of noise arising from the site.

7.78 The design and layout of mineral development at all stages of the site's life should be appropriate to the existing acoustic environment, including background noise levels and local topography.

7.79 Noise assessments should be undertaken using *BS4142: 2014 Methods for Rating and Assessing Industrial and Commercial Sound*, unless a different standard is justified. The Mineral Planning Authority will expect all noise sources to be identified, likely noise levels to be predicted and the potential impacts from development to be removed or managed to an acceptable level.

7.80 Appropriate noise limits at sensitive properties and/or monitoring of noise conditions at mineral workings will be applied to safeguard against disturbance from the site.

Vibration

7.81 Vibration associated with mineral operations is principally caused by vehicle movements, particularly over uneven surfaces, or by blasting. Blasting can cause both ground vibration and air overpressure, which can be disturbing to the local community and harmful to wildlife habitats.

7.82 Where vibration, including air overpressure, is likely to occur, an assessment should be undertaken to demonstrate the extent of the impact and how it will be managed to an acceptable level.

25 See Defra definition in Defra (2010) *Odour Guidance for Local Authorities* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69305/pb13554-local-auth-guidance-100326.pdf.

26 *H4: Odour Management*, Environment Agency, 2011. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/296737/geho0411btqm-e-e.pdf.

27 http://iaqm.co.uk/text/guidance/odour-guidance-2014.pdf.

Light

7.83 For health and safety reasons, areas of a mineral site, such as the processing plant and/or stockpiling area, are likely to require lighting, particularly during winter months and in poorer light conditions. Lighting may also be required during restoration or as an element of the site after-use. Insensitive use of lighting can be a source of annoyance to people and harmful to wildlife through glare, unnecessary light spillage beyond site boundaries and sky glow.

7.84 A lighting assessment will be required to accompany development proposals where significant external lighting is required. This should consider the position, type, height, alignment, intensity and periods of use of luminaries and demonstrate how light pollution will be avoided or managed to an acceptable level.

7.85 All external artificial lighting should be compliant with guidance produced by the Institute of Lighting Engineers, currently *Guidance for the Reduction of Obtrusive Light (2012)*. Reference should be made to appropriate advice, this could include:

- Royal Commission on Environmental Pollution (2009) *Artificial light in the environment*;[28]
- Buglife (2011) *A Review of the Impact of Artificial Light on Invertebrates*;[29]
- Bat Conservation Trust (2014) *Artificial lighting and wildlife, Interim Guidance: Recommendations to help minimise the impact artificial lighting*;[30]

Visual impact

7.86 Mineral development (during operations, restoration and afteruse) can cause visual impacts such as visual intrusion affecting amenity, or be distracting to drivers, posing a road safety hazard. This is separate to the potential for landscape impacts (see **Policy MLP 19**).

7.87 The technical assessment accompanying the planning application should be proportionate to the nature and scale of development proposed, but landscape and visual impact assessments should be undertaken in accordance with guidance published by the Landscape Institute; the current reference being *Guidelines for Landscape and Visual Impact Assessment (GLVIA3)* published in April 2013.[31]

7.88 The Mineral Planning Authority will expect proposals to incorporate best practice measures to minimise the effects of visual intrusion. Care should be taken to ensure that screening measures are appropriate and are not, in themselves, a source of visual intrusion. Locally appropriate planting could be used to create natural screening that also contributes positively to the local landscape character and distinctiveness of the area and provides additional habitat benefits.

Hedgerow planting

Health and well-being

7.89 Mineral development could have both positive and negative effects that lead to changes in health outcomes for the local or wider population.

7.90 Negative health impacts may include both mental and physical well-being, and may result in impacts such as increased health risks from decreased air quality or creation of dust emissions or less physical activity when access to publicly accessible green space is reduced. Many of these effects can be overcome by good design and through good community dialogue.

28 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228832/9780108508547.pdf.pdf.
29 https://www.buglife.org.uk/advice-and-publications/publications/campaigns-and-reports/review-impact-artificial-light.
30 http://www.bats.org.uk/pages/bats_and_lighting.html.
31 Landscape Institute http://www.landscapeinstitute.org/knowledge/GLVIA.php.

7.91 Mineral development has the potential for positive effects through the provision of jobs, outdoor recreation opportunities and improvements to the local environment. The creation of accessible and attractive spaces through site restoration can contribute to increased physical activity and lead to long term community benefits through supporting local cohesion and interaction. Opportunities for improving the health and well-being of the local population should be identified and incorporated into the development.

7.92 The Mineral Planning Authority will expect health impacts to be considered through a health impact assessment that is proportionate to the development proposed. The assessment should:

- enable a thorough evaluation of the nature, magnitude, extent and likelihood of the potential impacts on health and well-being; and
- set out proposed measures for minimising any negative health impacts, and enhancing opportunities for health and well-being improvements as a result of the proposed development.

7.93 Useful information about health impact assessments may be gained from the "HIA Gateway", part of Public Health England.[32] Other locally available information should also be taken into account in preparing planning applications.

Mitigation

7.94 All proposals will be expected to incorporate robust measures to ensure that mineral sites and associated transport modes do not cause an unacceptable adverse impact.

7.95 Most impacts can be overcome by implementing appropriate measures, including:

- limiting working hours;
- locating plant, machinery and haulage routes away from sensitive receptors;
- tree planting prior to development enabling it to mature in advance of a phase being worked to provide natural screening and dust barrier. Planting should be in keeping with the local landscape character and provide biodiversity benefit;
- fitting plant with silencers and white noise alarms;
- phasing that takes account of sensitive receptors and enables restoration at the earliest opportunity;
- acoustic screening measures such as planting that fits with landscape character and could also provide biodiversity benefit;
- enclosing plant and machinery where buildings are appropriate;
- sheeting of lorries and cleaning of lorry wheels before they exit the site;
- good maintenance of bunds and stockpiles. This might include bunds managed appropriately for biodiversity and visual benefit (for example seeded with pollinator-friendly species or used to create temporary acid grassland habitats);
- Ensuring waterbodies such as settlement, silt lagoons or SuDS features enable physically active management to ensure they do not become stagnant and result in odour impacts. They would be expected to provide biodiversity benefit where appropriate;
- avoiding or minimising the use of blasting explosives;
- careful design of external lighting to confine its influence to the point of use; or
- incorporating publicly accessible spaces or viewpoints of workings where appropriate, with information about the site and its surroundings. The potential of organised site visits for the local community could also be explored.

Access and recreation

7.96 Publicly accessible green spaces and outdoor recreation are enjoyed across Worcestershire and are an important element to people's quality of life. There are a wide range of informal recreation sites in the county which are valued by residents and visitors. Recreation routes, including rights of way and other public access routes, form a significant part of our heritage as well as being a major recreation, tourism and transport resource."[33] Mineral development has an important role to play in enhancing recreational resources within the county.

32 http://www.apho.org.uk/default.aspx?RID=40141
33 *Rights of Way Circular (1/09). Guidance for Local Authorities*, October 2009, paragraph 1.4

Policy MLP 17: Access and Recreation

Contributing to:

Objective 1 Objective 10 Objective 11 Objective 13

a) Planning permission will be granted for mineral development proposals that optimise opportunities to improve public access networks, integrating other green infrastructure components where appropriate.

b) Development that affects a right of way or existing publicly accessible green space will only be permitted where it is demonstrated that:

i) any temporary diversion is designed to be for as short a distance and duration as practicable;

ii) any permanent diversion is designed to achieve an enhanced route over that which was previously available; and

iii) any closure occurs only in exceptional circumstances and compensatory provision is made.

Geopark way walkers, courtesy of Herefordshire and Worcestershire Earth Heritage Trust

Reasoned justification

7.97 The *National Planning Policy Framework* is clear that planning policies should protect and enhance public rights of way and access. Informal access and recreation opportunities form part of the green infrastructure network in Worcestershire. Recreation assets will be expected to be natural or semi-natural.

7.98 The *Worcestershire Green Infrastructure Strategy* identifies the social, environmental and economic benefits of these resources and presents the current understanding of the supply, potential need and capacity of strategic recreational assets within the county.

7.99 **Policy MLP 17** applies to all public rights of way, whether definitive or permissive.

Improving public access networks

7.100 Mineral workings and restored sites can contribute to the protection and enhancement of publicly accessible green space and recreation resources within Worcestershire.

7.101 It is expected that all working and restoration proposals will show how opportunities to protect and improve the quality of existing assets and networks, and improve links between them, have been considered. Public access and recreation enhancements should, mindful of the need for safety, be made available at the earliest opportunity.

7.102 The delivery of new assets and enhancement of networks will be encouraged where appropriate, particularly where they contribute to long-distance recreation routes and Sustrans routes. The **spatial strategy** highlights the **strategic corridors** in which provision of access and recreation assets or enhancement of public access networks is a strategic issue. Other locally available information should also be taken into account in the design of mineral site working and restoration schemes. The interactive minerals mapping tool may provide a starting point for this.[34]

7.103 It will usually be possible to incorporate green infrastructure benefits. Proposals might include:

- improving the route, surface or accessibility of rights of way or adding links to existing rights of way networks;
- making outdoor areas accessible and engaging for people with disabilities;
- publicly accessible green space that includes BAP priority habitats or is managed for wildlife and pollinator species; or
- providing information about the area and its significance. This might include providing access to, and interpretation about, archaeological or geological or geomorphological features, either within sites or as features along a route.

7.104 Public access may not be appropriate in all cases, or may need to be restricted in some areas, for example due to safety hazards or to protect sensitive habitats, heritage assets or landscape features. These areas and the reasons why public access is not appropriate, or needs to be restricted, should be made clear within the planning application.

7.105 Any potential for a greater level of built development not directly related to minerals development is likely to require separate planning permission.

34 Interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

Development that affects a right of way or existing publicly accessible green space

7.106 Public rights of way and publicly accessible green space can be adversely affected by mineral operations. The need to access the mineral reserve and to implement appropriate safety measures may result in footpaths being temporarily or permanently diverted, or in exceptional circumstances, closed.

7.107 Temporary diversions should follow the shortest route that delivers a suitable replacement and should only be in place for the shortest duration required, which may not be the lifetime of the development. Enhancement can be achieved through improvements to the view from, surface of and/or route of the right of way, including making provision for disabled people.

7.108 Footpaths are rooted in an historical and landscape context. A permanent diversion may sever important cultural links, but also brings the opportunity to improve a route that has been adversely affected by other factors, such as flooding or a changed view. Permanent diversions should enhance the rights of way network through good design that reflects the local cultural and landscape context.

7.109 Any closure of the right of way network, or existing publicly accessible green space, should be avoided. Where it is necessary, the Mineral Planning Authority will expect compensatory provision to be made proportionate to the scale of the closure. This can include the provision of new or improved access or recreation facilities located off-site.

Natural and historic environment

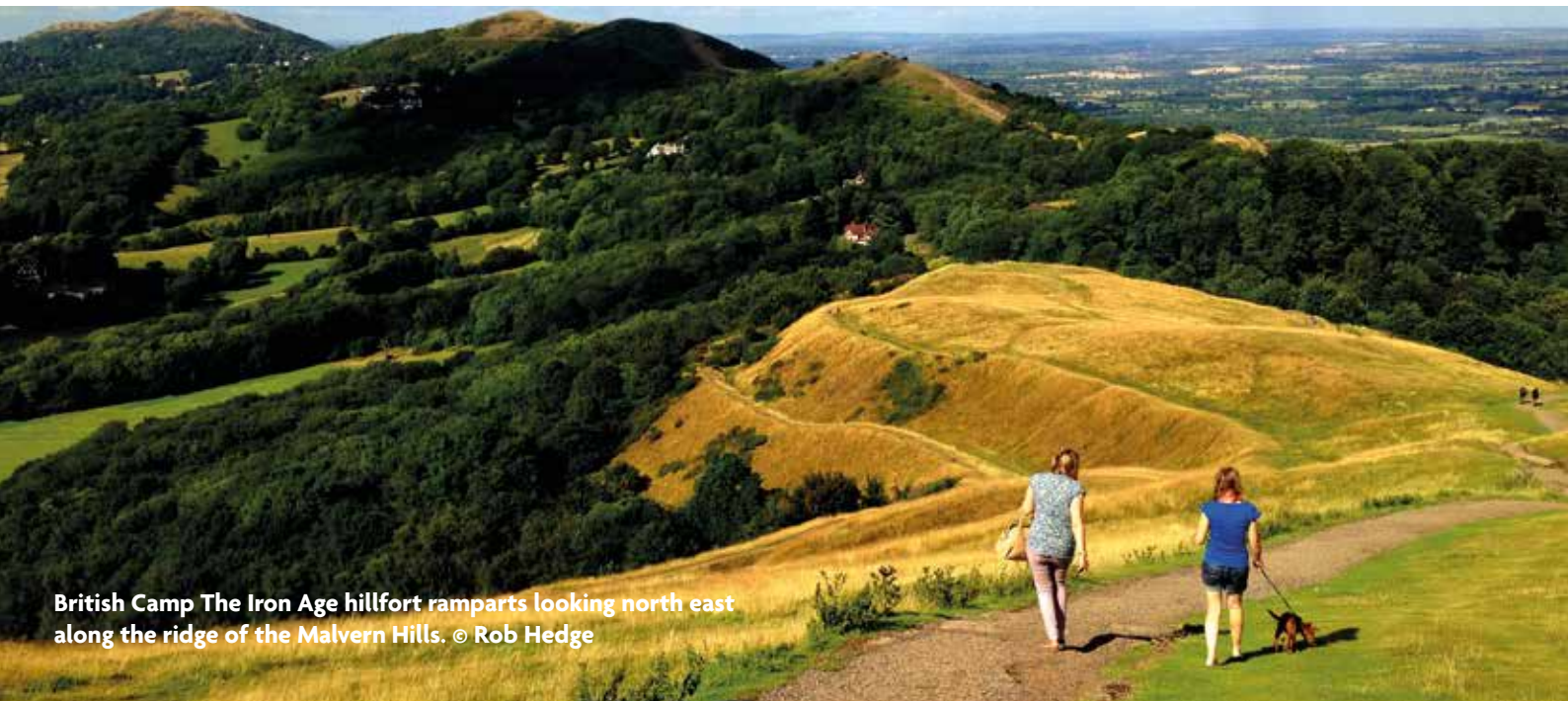
7.110 The *National Planning Policy Framework* makes clear that the planning system should contribute to and enhance the natural and historic environment, not least through recognising the wider benefits of ecosystems and seeking to avoid harm. It also places plan-making in a central role providing a positive strategy for the conservation and enjoyment of the historic environment and identifying the role of networks of green infrastructure in the enhancement of the natural environment and climate change resilience.

7.111 *Worcestershire's Strategic Economic Plan*[35] recognises that, with its many natural, historic and cultural assets, Worcestershire provides an excellent living and working environment and represents an important visitor destination.

7.112 This section focusses on the conservation and enhancement of:

- biodiversity;
- landscape;
- agriculture and soils;
- geodiversity;
- the water environment; and
- the historic environment.

35 *World Class Worcestershire: Our Strategic Economic Plan*, Worcestershire Local Enterprise Partnership, 2014



British Camp The Iron Age hillfort ramparts looking north east along the ridge of the Malvern Hills. © Rob Hedge

7.113 Internationally, nationally and locally identified sites, habitats, species and heritage assets are presented in **Table 7.1**.

Table 7.1. Internationally, nationally and locally identified sites, habitats, species and heritage assets

	Natural environment assets	Habitats	Species	Heritage assets
International	• Ramsar site • European site (SAC and SPA and candidate sites)	• Any internationally designated or protected habitats	• Any internationally protected species • European Protected Species[36]	• World Heritage Sites and candidate sites • Any heritage assets of international significance
National	• National Nature Reserves • Sites of Special Scientific Interest (SSSI)[37]	• National Biodiversity Action Plan (BAP) habitats • Ancient Woodland	• National Biodiversity Action Plan (BAP) species • Section 41 notable and protected species list[38]	• Registered Battlefields • Registered Historic Parks and Gardens • Scheduled Ancient Monuments • Listed Buildings • Conservation Areas
Local	• Local Nature Reserves • Local Geological Sites[39] • Local Wildlife Sites[40] • Listed assets of community value • Local Green Spaces designated through Local or Neighbourhood Plans	• Local Biodiversity Action Plan (BAP) habitats	Local Biodiversity Action Plan (BAP) species	• Historic environment and heritage assets recorded on county historic environment record (HER) and local lists or identified through pre-determination investigation, including archaeological features, and landscapes and their settings • Historic farmsteads[41] • Vernacular or locally important features • Listed assets of community value • Unregistered historic parks and gardens of local importance[42]
Non-designated	• Candidate sites confirmed as meeting criteria for designation as a local, national or international asset			• Candidate sites confirmed as meeting criteria for designation as a local, national or international asset

36 European Protected Species receive protection under *The Conservation of Habitats and Species Regulations 2010*
37 SSSI are designated for biological and/or geological interest.
38 *Natural Environment and Rural Communities Act, 2006.*
39 Information on-sites of geodiversity importance is available from Herefordshire and Worcestershire Earth Heritage Trust - www.earthheritagetrust.org.
40 Information on Local Wildlife Sites, including Roadside Verge Nature Reserves, is available from Worcestershire Wildlife Trust - www.worcswildlifetrust.co.uk.
41 Worcestershire Farmsteads Assessment Guidance Toolkit is available at http://www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1023/historic_farmstead_characterisation.
42 Information on locally important parks and gardens is available from Hereford and Worcester Gardens Trust - http://www.hwgt.org.uk/

Biodiversity

7.114 A healthy, properly functioning natural environment is the foundation of sustained economic growth, prospering communities and personal well-being,[43] but the benefits that we derive from the natural world and its constituent ecosystems are consistently undervalued.[44] The *National Planning Policy Framework* is clear that sustainable development should seek to move from net-loss to net-gain for nature by supporting healthy, well-functioning ecosystems and coherent ecological networks. Managing our biodiversity is important for both climate change mitigation and adaptation.[45]

7.115 In conjunction with the **spatial strategy**, **Policy MLP 18**, seeks to deliver coherent and resilient ecological networks and well-functioning ecosystems capable of responding to the challenges of climate change and development pressures. Networks are important for allowing the movement of species to respond to changes in habitat, climate, and to maintain genetic diversity. Ecosystem services are important for providing a range of services upon which we all depend, such as water quality improvements, decomposition of wastes, and healthy soil production.

43 *The Natural Choice: Securing the value of nature, Defra, June 2011*
44 http://www.wildlifetrusts.org/living-landscape/issues-comment-and-opinion/national-ecosystem-assessment-dr-bob-watson.
45 *Biodiversity 2020: A strategy for England's wildlife and ecosystems services, Defra, 2011.* This aims to halt overall biodiversity loss, support healthy, well-functioning ecosystems and establish coherent ecological networks for the benefit of people and wildlife.

Alluvial Fenlands

Policy MLP 18: Biodiversity

Contributing to:

Objective 1 Objective 9 Objective 11 Objective 13

Planning permission will be granted where it is demonstrated that the proposed mineral development will achieve net biodiversity gain through protecting and enhancing the network of flora, fauna and habitats.

A level of technical study appropriate to the biodiversity feature will be required to demonstrate that the proposed development:

a) will not give rise to any likely significant adverse effects on the integrity of a European site (either alone or in combination with other plans or projects, including as a result of changes to air or water quality, hydrology, noise, light and dust) unless there are no alternative solutions, imperative reasons of overriding public interest are demonstrated and functional compensation is provided; and

b) will not give rise to a significant adverse effect on a Site of Special Scientific Interest, except where the benefits of the development clearly outweigh the importance of the site and where no suitable alternative exists; and

c) will not give rise to the loss or deterioration of Local Wildlife Sites except where the need for and benefits of the development in that location outweigh the impacts; and

d) will not result in the loss of populations of a priority species or areas of priority habitat, including ancient woodland or veteran trees, except where the need for and benefits of the development in that location clearly outweigh the loss; and

e) avoids harm to the biodiversity feature or otherwise reduces it to an acceptable level through appropriate mitigation, with functional compensation accepted only as a last resort; and

f) will optimise biodiversity gain by enhancing, linking and extending existing habitat networks, integrating other green infrastructure components where appropriate; and

g) incorporates appropriate long term management of the restored site.

BAP habitat: Wet Grassland, Lower Moor, Worcestershire

Avon Meadows boardwalk and weir, Pershore

Reasoned justification

7.116 Flora, fauna and habitats are important in themselves and form part of the green infrastructure network in Worcestershire. The minerals industry presents a unique opportunity to provide a net gain in biodiversity and to improve the coherence and resilience of habitats and ecological networks, enabling wildlife to respond to a range of environmental pressures.[46]

Derelict orchard along banks of the River Avon

Protecting biodiversity

7.117 Flora, fauna and habitats may be protected through European and national legislation in addition to the Minerals Local Plan.[47] *Circular 06/2005: Biodiversity and geological conservation - Statutory obligations and their impact within the planning system*, provides guidance on the application of the law relating to planning and nature conservation as it applies in England.[48]

7.118 *The Conservation of Habitats and Species Regulations 2010*, usually called simply 'the Habitats Regulations', provide for the protection of 'European sites' of designated or candidate Special Areas of Conservation and Special Areas of Conservation (SAC) under the Habitats Directive[49] and Special Protection Areas (SPA) classified under the Birds Directive.[50] The Habitats Regulations also apply to Ramsar sites and potential SPAs.

7.119 In determining mineral planning applications, the Mineral Planning Authority will be the competent authority and expects applications to provide appropriate information to enable robust decision-making. The presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.

7.120 There are a number of Sites of Special Scientific Interest (SSSI) within Worcestershire that are

46 Nature after Minerals, available at http://afterminerals.com.
47 See Table 7.1
48 https://www.gov.uk/government/publications/biodiversity-and-geological-conservation-circular-06-2005
49 *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.* http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm.
50 *Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds.* http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm.

designated and protected under the *Wildlife and Countryside Act 1981*, as amended by the *Countryside and Rights of Way Act 2000*. The Mineral Planning Authority will exercise its duty to take reasonable steps to further the conservation and enhancement of the special features of SSSI. Local Wildlife Sites are designated at the local level and Ancient Woodland is recognised as a locally and nationally important habitat.

7.121 The technical assessment accompanying the planning application will be expected to set out the options considered and clearly explain why the submitted proposal was chosen and how harm is avoided, mitigated or compensated. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on biodiversity. Planning applications should identify the hierarchy of international, national and locally designated sites, so that their protection is commensurate with their status and appropriate weight is given to their importance and the contribution that they make to wider ecological networks. A *Habitats Regulations Assessment* will be required in relation to the designated European sites.

7.122 *Circular 06/2005* also identifies those species that are conserved by law, many of which are present in Worcestershire. The presence of a protected species is a material consideration in determining a planning application that would be likely to result in harm to the species or its habitat.

7.123 The matters set out in **Policy MLP 16** will often be relevant to flora, fauna and habitats and should be considered, especially when assessing the impacts on sites covered by the *Habitats Regulations*. An ecological survey will be necessary in advance of a planning application where the type and location of development could have a significant impact on biodiversity and existing information is lacking or inadequate.

7.124 Buffer zones may be necessary to protect vulnerable features, with the size or shape of the buffer defined on a case-by-case basis dependent on the attributes of the site and its surroundings. Where it brings greater benefit overall, particularly through improved connectivity between habitats, it may be appropriate to work close to designated features. These opportunities should be considered in mineral development proposals.

7.125 Mitigation will be expected to achieve ecological functionality. **Policy MLP 18** seeks to retain flora, fauna and habitat assets on-site. Biodiversity offsetting will be considered only in exceptional circumstances; this does not affect the Mineral Planning Authority's expectation that the mitigation hierarchy would apply and any offsetting scheme would need to apply Defra guidance[51] as a minimum.

Wet woodland habitat

Enhancing, linking and extending habitat and networks

7.126 Mineral working and restoration will be expected to contribute to habitats and networks at a landscape-scale taking account of the attributes of the site and of nearby areas. This will support coherent and resilient networks of habitats that link the site with relevant ecological features in the wider landscape or provide stepping stones between existing sites to help reduce habitat fragmentation.

51 *Biodiversity Offsetting Pilots: Guidance for developers*, Defra, March 201

7.127 Proposals for mineral development should include a clear strategy for enhancing biodiversity as an integrated part of multifunctional green infrastructure within the framework of the identified priorities for the relevant **strategic corridor**. By proactively designing and delivering integrated green infrastructure, mineral working and restoration has substantial potential to enhance biodiversity alongside other priorities. Measures might include:

- pasture and meadows that provide habitat gains and enhancements to the water environment and can be managed through grazing for economic benefit, complementing the local landscape character and the setting of heritage assets;
- publicly accessible green space that includes Biodiversity Action Plan priority habitats or is managed for wildlife and pollinator species;
- roadside verges or site access with planting such as wildflowers suitable for local pollinators;[52] or
- planting that is in keeping with the local landscape character and provides biodiversity benefit can be used to provide natural screening, noise and dust barriers.

7.128 In seeking to achieve net gain, restoration and afteruse strategies should consider *Biodiversity 2020*,[53] *section 41 notable species,* local Biodiversity Action Plan targets,[54] the technical research paper '*Biodiversity and Mineral Sites in Worcestershire, Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*',[55] and the Worcestershire Habitat Inventory (WHI).[56] Other locally available information should be taken into account. The interactive minerals mapping tool will provide a starting point for this.[57]

7.129 Biodiversity enhancement should be made at the earliest opportunity and is expected to be taken into account in the preparation, working and restoration of sites.

Long term management for biodiversity

7.130 Long term management beyond the statutory five year aftercare period will be required where appropriate, for example to establish a new habitat. Commitment for such provision will be gained through a planning obligation, as set out in **Policy MLP 26**.

Landscape

7.131 Landscape is more than just scenery. Landscapes have evolved over time as a result of both natural and cultural processes. Natural processes give rise to the physical structure of the landscape: geology, land form and soils. Cultural processes reflect human endeavours to live on and from the land, giving rise to varying patterns and types of vegetation, presence or absence of trees, field boundaries and settlement patterns. Physical elements provide the fundamentally stable basic pattern of landscape, while cultural elements are superimposed on this and are more fluid, reflecting social and land use changes over time. Layered on top of this is the perceptual element: personal appreciation of landscape and how individuals and communities relate to or make use of it.

7.132 The particular qualities of the landscape play a major role in defining sense of place and belonging to an area forming part of its distinctiveness and the cultural identity of its communities. Living within aesthetically pleasing and culturally meaningful landscapes contributes to mental health and well-being and can strengthen the local economy by attracting residents and investment and forming a key draw for tourists visiting Worcestershire.

52 The National Pollinator Strategy: for bees and other pollinators in England, Defra, November 2014 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/409431/pb14221-national-pollinators-strategy.pdf.
53 Defra (2011) "Biodiversity 2020: A strategy for England's wildlife and ecosystem services" https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services.
54 http://www.worcestershire.gov.uk/info/20252/environmental_policy/1155/biodiversity_action_plan.
55 http://www.worcestershire.gov.uk/downloads/file/489/biodiversity_and_mineral_sites_in_worcestershire_guidance_for_the_sustainable_management_of_biodiversity_action_plan_habitats_at_worcestershire_mineral_sites.
56 http://www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.
57 Interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

Policy MLP 19: Landscape

Contributing to:

Objective 1 Objective 11 Objective 13

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect and enhance the character and distinctiveness of the landscape.

A level of technical study appropriate to the setting will be required to demonstrate that the proposed development:

a) is in the public interest where it is within the Cotswolds or Malvern Hills Areas of Outstanding Natural Beauty and that exceptional circumstances exist; and

b) will not result in unacceptable adverse impacts on the setting of the Cotswolds or Malvern Hills Areas of Outstanding Natural Beauty; and

c) will optimise landscape benefits by integrating the site into the existing landscape, protecting, restoring, enhancing and creating features which strengthen the inherent landscape character and contribute to local distinctiveness, integrating other green infrastructure components; and

d) incorporates appropriate long term management of the restored site.

View from Bredon Hill, part of the Cotswolds Area of Outstanding Natural Beauty

Hedgerows and fencelines contribute towards landscape character

Reasoned justification

7.133 Mineral workings will impact on the landscape in different ways during different phases of working and restoration. Minerals development forms part of the ever-changing landscape and features from mineral working can sometimes be read as cultural components within the landscape's evolution. Care must be taken to protect valued landscapes and to avoid degradation of landscape character and local distinctiveness.

7.134 Carefully designed mineral development provides a unique opportunity to repair disjointed landscapes and reverse the dilution of landscape character.

Areas of Outstanding Natural Beauty

7.135 Two Areas of Outstanding Natural Beauty (AONB) are partially situated within Worcestershire: the Malvern Hills AONB[58] which extends into Herefordshire and a small part of Gloucestershire; and the western extremity of the extensive Cotswolds AONB,[59] stretching across Bredon Hill and the Cotswold scarp beyond Broadway.

7.136 The Management Plans for these AONB address the need to conserve and enhance landscape character at a local scale, providing both an overarching vision for the future of the AONB and more detailed guidance on achieving the aspirations of the respective Partnerships. Whilst mineral development is not promoted in the AONB, the Management Plans recognise that supply of high-quality building stone may be important to restore characteristic local features. The Management Plans will be important references for proposals that are within the setting of, or visible from, the AONB.

7.137 Great weight will be given to conserving the landscape and scenic beauty of the AONB and their setting.

7.138 Applications will be expected to reflect the requirements of national policy and guidance and the relevant provisions of the AONB management plans.

7.139 Much of the land in the Malvern Hills AONB in Worcestershire is also controlled by the Malvern Hills Conservators who have the statutory duty to "as far as possible preserve the natural aspect of the Malvern Hills" with a focus on "quarrying operations".[60]

Village Farmlands with Orchards landscape, Chadbury Worcestershire

58 http://www.malvernhillsaonb.org.uk/
59 http://www.cotswoldsaonb.org.uk/
60 Malvern Hills Act 1924. Further information can be found in the Minerals Local Plan background evidence document *Malvern Hills Acts* available at www.worcestershire.gov.uk/mineralsbackground.


Typical Village Claylands landscape

Optimising landscape benefits

7.140 Landscape components must be considered throughout the life of the site. Landscape character and local distinctiveness are two separate, albeit interrelated, concepts. Landscape character is defined by particular combinations of characteristics occurring in repeated patterns over a particular area. Local distinctiveness relates to the presence of individual, often unique, features, which contribute to what we regard as local distinctiveness. Development proposals should also recognise inherited historic landscape character.

7.141 It is expected that site design will integrate proposals into the existing landscape as far as practicable, throughout the life of the site. During working phases this is likely to focus on protecting important landscape features, particularly where they are difficult to replace. However there is significant scope for site layout, planting and screening to restore, enhance and/or create features that strengthen inherent landscape character and contribute towards local distinctiveness. The restoration and after-use of the site will provide further opportunities to enhance landscape features.

7.142 Worcestershire's *Landscape Character Assessment Supplementary Guidance*[61] provides a clear indication of those features that define the character of a particular area, together with the relative importance of those features. The individual **strategic corridor** policies highlight the key characteristics that should be drivers in the design of mineral site working and restoration schemes in each corridor. Multiple sites within the same corridor which are worked and restored on different timescales could together have a landscape-scale impact. Analysis of the components that make up landscape must be made at a scale that is commensurate with understanding the landscape as a whole.

7.143 Landscape character is formed in part by the interaction of many of the other green infrastructure components, it is therefore uniquely placed to provide the over-arching framework within which other priorities are delivered.

7.144 Proposals should seek to retain and deliver green infrastructure that connects in an appropriate way with the wider landscape beyond the site boundary. This might include measures such as:

- protecting or re-instating historic landscape features such as hedgerows, woodland or water meadows;
- ensuring any planting is appropriate to the landscape character, using locally present species to optimise biodiversity gains;
- designing waterbodies to be of a type, shape and scale that fits with the local landscape character and optimises biodiversity gains, flood betterment or water quality improvements;
- creating agricultural fields of an appropriate scale and pattern with hedgerows which link existing networks; or
- interpretation boards at publically accessible areas to enable greater understanding of the landscape, historic landscape character and influence of the underlying geology.

7.145 Development proposals should present a sustainable and practicable working, restoration and after-use strategy, which integrates green infrastructure components into a realistic and deliverable final land form and use.

7.146 Planning applications that propose significant landscape change at either the local or landscape-scale are unlikely to be considered acceptable. Achieving an appropriate restoration scheme may require specific working practices, and in some cases this may impact on the quantity of mineral which can be extracted sustainably. This may mean working resources in a different manner than has taken place historically, particularly as landfilling was traditionally used to return land to previous levels and is now discouraged in Worcestershire.[62]

61 www.worcestershire.gov.uk/lca.

62 *The Waste Core Strategy for Worcestershire (2012)* (www.worcestershire.gov.uk/wcs) and Annual Monitoring Reports (www.worcestershire.gov.uk/amr) show that the existing void space at landfill sites in the county is sufficient to manage the amounts and types of waste expected to need to be landfilled or disposed of over the life of the *Waste Core Strategy*. *The Waste Core Strategy* encourages management of waste at higher levels of the waste hierarchy. Therefore landfill and disposal facilities will not be encouraged.

7.147 *Landscape Character Assessment*[63] and *Historic Landscape Characterisation*[64] are tools that can direct land use change in ways that will prevent the destruction of the inherent landscape character or take advantage of opportunities to strengthen the character or legibility of the landscape and thus enhance local distinctiveness. Local resources on these topics should be used to inform any landscape focused technical assessment accompanying the planning application.

7.148 The technical assessment accompanying the planning application will be expected to set out the options considered and clearly explain why the submitted proposal was chosen. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on the landscape, however all landscape and visual impact assessments should be undertaken in accordance with guidance published by the Landscape Institute; the current reference being *Guidelines for Landscape and Visual Impact Assessment (GLVIA3)* published in April 2013.[65]

Long term management for landscape

7.149 Long term management beyond the statutory five year aftercare period will be required where appropriate. Long term land use and management should be considered from the outset. Commitment for such provision may be gained through a planning obligation, as set out in **Policy MLP 26**.

Agriculture and soils

7.150 Soil is a fundamental and ultimately finite resource that fulfils a number of functions and services for society that are central to sustainability. As well as providing the basic substrate for Worcestershire's agricultural and horticultural sectors to grow food and other products, it also stores water and carbon, is home to a wide range of biodiversity and sustains some of our most valued landscapes. Worcestershire is one of the most geologically diverse counties in England and this is reflected in the variety of geology and soils present within the county.

63 http://www.worcestershire.gov.uk/info/20014/planning/1006/landscape_character_assessment/
64 http://www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1062/historic_landscape_characterisation_hlc.
65 Landscape Institute http://www.landscapeinstitute.org/knowledge/GLVIA.php.

Typical Settled Farmlands with Pastoral Land Use landscape

Policy MLP 20: Agriculture and Soils

Contributing to:

Objective 1 Objective 9 Objective 11 Objective 12 Objective 13

Planning permission will be granted where it is demonstrated that the proposed mineral development will conserve soil resources and safeguard the long term potential of best and most versatile agricultural land, integrating other green infrastructure components where appropriate.

A level of technical study appropriate to the location will be required to demonstrate that the proposed development:

a) **includes measures to ensure that soil quality will be adequately protected and maintained throughout the life of the development and, in particular, during stripping, storage, management and final placement of soils, subsoils and overburden arisings as a result of site operations; and**

b) **will develop areas of poorer quality land in preference to high quality land unless significant development of agricultural land is demonstrated to be necessary; and**

c) **avoids damaging the long term potential of best and most versatile agricultural land; and**

d) **incorporates appropriate long term management of the restored site.**

Settled Farmlands on River Terrace landscape, Kempsey

Principal Settled Farmlands landscape, Worcestershire

Reasoned justification

7.151 Worcestershire's soils face increasing pressures from climate change and development, including mineral extraction. Perceptions of land as purely a physical resource are changing with the increasing recognition of the wider functions of soils and capacities to support ever-increasing demands placed upon them by industry and society and as such are an important consideration in spatial planning. The capacity and condition of local soils is an essential consideration of sustainable development.

7.152 Agricultural land use can contribute positively to other green infrastructure components. It forms a key characteristic of landscape character and has the potential to provide ecosystem services. Protecting soils and the services they provide, including the protection of best and most versatile agricultural land, is essential to achieve a thriving agricultural sector[66] and a sustainable, healthy food supply, as well as securing a high quality environment to support long term economic prosperity.

7.153 Agricultural and soil resources are therefore considered as green infrastructure components for the purposes of the Minerals Local Plan.

Grazing at Hornhill Meadows, Worcestershire

Soil quality

7.154 Soils overlie mineral resources and the extraction of these resources can severely disrupt the soil ecosystem through the movement and mixing of soils and vegetation that have developed over hundreds or thousands of years. Protection of the original soil asset removed prior to mineral extraction should always be a priority. The stripping and storage of soils for reuse and restoration in mineral working can lead to degradation, although best practice in soil management can minimise the impacts of this damage.

7.155 Planning applications should demonstrate how best practice measures for soil handling and storage will be achieved on-site. Reference should be made to guidance published by Defra: *Construction Code of Practice for the Sustainable Use of Soils on Construction-sites*;[67] and the series of *Good Practice Guides for Handling Soils.*

Agricultural land quality

7.156 Although Worcestershire has a strong agricultural sector, land quality varies throughout the county. The Agricultural Land Classification provides a method for assessing the quality of farmland to enable sustainable choices to be made about its future use within the planning system. The system classifies land into five grades with the 'best and most versatile land' defined as grades 1, 2 and 3a.[68]

7.157 Planning applications will be expected to show that areas of poorer quality land will be used in preference to those of higher quality. This may be achieved through alternatives locations or the design or layout of workings.

66 Including: agri-tech; horticulture; and food production.

67 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69308/pb13298-code-of-practice-090910.pdf.

68 Department for Communities and Local Government (2012) National Planning Policy Framework, 2012, paragraph 112. The grades of agricultural land in Worcestershire can be viewed in the interactive minerals mapping tool at www.worcestershire.gov.uk/minerals.

7.158 However, it is recognised that there is significant overlap between best and most versatile agricultural land and mineral resources. In demonstrating that mineral development on the best and most versatile agricultural land is necessary, planning applications will be expected to consider whether the need for development outweighs the adverse impact upon agricultural land quality and whether alternative land of lower agricultural value has considerations which outweigh the adverse impact upon agricultural land quality.

Long term potential of best and most versatile agricultural land

7.159 On many sites the ability to achieve high standards of restoration should enable mineral extraction to occur without the irreversible loss of land quality. Where minerals underlie the best and most versatile agricultural land it is particularly important that working, restoration and aftercare preserve the long term potential of the land as a national, high quality, agricultural resource.

7.160 Working and restoration schemes should incorporate remediation activities and after-use proposals that optimise the storage and use of best and most versatile soils. It is not always necessary for high quality land to be restored to agricultural use, but restoration and land use following mineral development should safeguard a site's long-term agricultural potential. Alternatively, it may be more beneficial for an area previously identified as best and most versatile agricultural land to be restored to another purpose, if this enables improved restoration elsewhere on-site. Reference should be made to *Guidance for the Successful Reclamation of Mineral and Waste Sites*, Defra (2004)[69] and the technical research paper titled '*Planning for Soils in Worcestershire*.'[70]

Integrating green infrastructure

7.161 A balance should be achieved between current and future agricultural need and other green infrastructure components. Proposals might include:

- benefits for biodiversity in the form of hedgerows, lakes and ponds, habitat features and small woodlands;
- Biodiversity Action Plan habitats such as lowland meadows or acid grasslands that can be compatible with commercial livestock systems;
- strengthening of landscape character by reverting to land uses and field patterns that are typical of the area;
- improving existing public access routes or adding to existing public access networks;
- contributing to agricultural irrigation, flood alleviation and water storage; or
- restoring historic land and water management through practices such as seasonal grazing and water meadows.

Long term management for agriculture and soils

7.162 Long term management beyond the statutory five year aftercare period will be required where appropriate. Commitment for such provision will be gained through a planning obligation, as set out in **Policy MLP 26**.

Geodiversity

7.163 "Geodiversity is the variety of rocks, fossils, minerals, soils, landforms and natural processes. Geodiversity directly influences and shapes our natural environment, our landscape and both where, and how, we live."[71] The underlying geology directly affects which soil types naturally form, which in turn affect the type of habitat that grows on the surface as well as topography, land use and settlement patterns, all of which contribute to landscape character.

Biodiversity rich rock face, courtesy of Herefordshire and Worcestershire Earth Heritage Trust

69 http://webarchive.nationalarchives.gov.uk/20090306103114/http://www.defra.gov.uk/farm/environment/land-use/reclamation/index.htm.

70 Prepared by Worcestershire County Council in partnership with the Herefordshire and Worcestershire Earth Heritage Trust and Natural England, published December 2011. http://www.swdevelopmentplan.org/wp-content/uploads/2014/11/CD-141-Planning-for-Soils-in-Worcestershire.pdf.

71 The English Geodiversity Forum. http://www.englishgeodiversityforum.org.

Policy MLP 21: Geodiversity

Contributing to:

Objective 1 Objective 8 Objective 11 Objective 13

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect and enhance geological conservation interests and geodiversity.

A level of technical study appropriate to the feature will be required to demonstrate that the proposed development:

a) **will not give rise to a significant adverse effect on a Site of Special Scientific Interest, except where the benefits of the development clearly outweigh the importance of the site and where no suitable alternative exists; and**

b) **will not give rise to the loss or deterioration of Local Geological Sites except where the need for and benefits of the development in that location outweigh the impacts; and**

c) **avoids harm to the geological conservation interest or otherwise reduces it to an acceptable level through appropriate mitigation, with functional compensation accepted only as a last resort; and**

d) **will optimise opportunities to improve the legibility and understanding of geodiversity, integrating other green infrastructure components where appropriate; and**

e) **incorporates appropriate long term management of the restored site.**

Geological features in the Malvern Hills

West Worcestershire hills

Reasoned justification

7.164 *The Geodiversity Charter for England*[72] sets out the clear ambition that geodiversity is recognised as an integral and vital part of our environment, economy and heritage that must be safeguarded and managed for current and future generations.

7.165 Many geological periods are represented in Worcestershire. The winning and working of minerals has a significant role to play in the management of geodiversity, both in terms of the use of geology as an economic resource and the potential to uncover previously unknown or poorly understood areas of geodiversity, thereby increasing our knowledge. It can also have the potential to harm geological conservation interests.

Sandy exposure in river terraces

Designated geological assets

7.166 Geodiversity, including the designation of geological SSSI, is protected by the *Wildlife and Countryside Act (1981)* as amended by the *Countryside and Rights of Way Act (2000)*. The Mineral Planning Authority will exercise its duty to take reasonable steps to further the conservation and enhancement of the special features of SSSI.

7.167 Local Geological Sites in Worcestershire cover a number of rock types and landscape features. Local Geological Sites are chosen for their educational, scientific or historical significance or for their aesthetic qualities in the landscape. Sites can vary in size from a small exposed bank in an old quarry to large sections of the Malvern Hills.

7.168 The technical assessment accompanying the planning application will be expected to set out the options considered and clearly explain why the submitted proposal was chosen and how harm is avoided, mitigated or compensated. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on geological conservation interests. Planning applications should identify the hierarchy of national and locally designated sites, so that their protection is commensurate with their status and appropriate weight is given to their importance.

7.169 Buffer zones may be necessary to protect vulnerable features, with the size or shape of the buffer defined on a case-by-case basis dependent on the attributes of the site and its surroundings. Where it brings greater benefit overall, particularly through improved understanding of the geological feature, it may be appropriate to work close to designated features. These opportunities should be considered in proposals for mineral development.

72 http://www.englishgeodiversityforum.org/Downloads/Geodiversity%20Charter%20for%20England.pdf.

7.170 Mitigation will be expected to contribute to geological understanding. This might involve recording and publishing findings, or exposing comparable features elsewhere.

Improving legibility and understanding of geodiversity

7.171 In areas where geological features are relatively abundant and well understood, a new feature or exposure of a similar nature may or may not add significantly to overall knowledge; something unique or special to that particular environment could be of much greater value.

7.172 It is expected that site working and restoration proposals within the Cotswolds or Malvern Hills AONBs or the Abberley and Malvern Hills Geopark will show how opportunities to improve legibility and understanding of geodiversity have been considered alongside the integration of other green infrastructure components.

7.173 However, opportunities to contribute to legibility and understanding of geodiversity are not limited to those areas. Features of geological importance may be discovered during mineral working. In many cases, such features may ultimately be removed by the process of extracting minerals but it is expected that opportunities to record significant features for scientific benefit are optimised and where features can be preserved this will be encouraged, particularly where they will deliver the objectives of UK and Worcestershire *Geodiversity Action Plans*.

7.174 Integrating geodiversity features as part of green infrastructure might include measures such as:

- providing safe public access to geological features with information to support understanding, interpretation and enjoyment of them;
- involving geologists, geodiversity groups and museums in advising on, recording and sampling geodiversity;
- retain exposed faces which display the geology and provide habitat for invertebrates;
- preserving locally distinctive landscape features.

7.175 Reference sources such as the *UK Geodiversity Action Plan (UKGAP)*,[73] *Worcestershire Geodiversity Action Plan*[74] and guidance available from the Geology Trusts,[75] could be used in preparing planning applications. Other locally available information should be taken into account. The interactive minerals mapping tool may provide a starting point for this.[76]

Long term management for geodiversity

7.176 Long term management might include management plans to protect and maintain exposures. Commitment for such provision may be gained through a planning obligation, as set out in **Policy MLP 26**.

Improving understanding of geology, Broadway Quarry, near Fish Hill

Water environment[77]

7.177 A sustainable water environment is essential for people, the economy and the environment. As well as providing habitat for aquatic life, clean and plentiful water is crucial to all aspects of society, from household consumption to industrial and agricultural uses. Poor water quality, limited water availability and flooding can all have significant detrimental impacts.

7.178 The water environment encompasses ground and surface water resources, including aquifers, source protection zones, nitrate vulnerable zones, ordinary water courses, main rivers, and flood plains.

7.179 Worcestershire's geology directly influences the nature of the water environment in different parts of the county. Clay deposits limit infiltration and lead to higher risk of surface water flooding whereas aquifers exist in the north of the county due to the permeable solid sand geology, and the sand and gravel deposits of the river terraces are largely within flood plains.

73 http://www.ukgap.org.uk/
74 Being prepared by the Herefordshire and Worcestershire Earth Heritage Trust http://www.earthheritagetrust.org/pub/
75 http://www.thegeologytrusts.org/pub/geoconservation/guidance-on-geoconservation/
76 Interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
77 The document *Worcestershire Minerals Local Plan: Surface and Ground Water Protection Issues, including Flood Risk Assessment of Submitted Sites* 2016 has informed the development of the Minerals Local Plan and is available at www.worcestershire.gov.uk/minerals.

Policy MLP 22: Water Environment

Contributing to:

Objective 1 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect and enhance the water environment.

A level of technical study appropriate to the relevant water feature will be required to demonstrate that, taking account of climate change, the proposed development:

a) **will avoid increasing flood risk to people and property, managing any residual risk through suitable adaptation and mitigation measures; and**

b) **will not cause unacceptable adverse impact on the quality, quantity or flow of ground and surface water resources; and**

c) **avoids harm to the water environment or otherwise reduces it to an acceptable level through appropriate mitigation, with functional compensation accepted only as a last resort; and**

d) **will optimise gains for the water environment, integrating other green infrastructure components where appropriate; and**

e) **incorporates appropriate long term management of the restored site.**

Reedbed in winter

Leisure barge on River Avon, Evesham

Reasoned justification

Flooding

7.180 Flooding can be from water courses, surface water, ground water or sewers. Worcestershire has been subject to severe flooding events in recent years, with the main sources of flooding differing across the county. Effective flood risk management is central to the economic prosperity of Worcestershire as a place for people to live, work and visit.

7.181 Mineral workings and restored sites can create greater flow capacity by improving channels to reinstate more natural fluvial-floodplain processes and could provide additional channel conveyance, flood storage or increase channel length which could have a net downstream benefit on flood risk.

7.182 Minerals working, restoration and afteruse strategies should consider the inter-related local and national flood and water management strategies which seek to improve understanding of flood risk, reduce the impact and frequency of flooding and reduce flood risk where possible. These, include:

- *Local Flood Risk Management Strategy;*
- *National Flood and Coastal Erosion Risk Management Strategy for England;*
- *River Basin Management Plans;*
- *Catchment Flood Management Plans;*
- *Strategic Flood Risk Assessments; and*
- *Surface Water Management Plans.*

7.183 Other locally available information should be taken into account. The interactive minerals mapping tool will provide a starting point for this[78] in addition to any local data which may be available from Worcestershire County Council as the Lead Local Flood Authority.

7.184 Planning applications will be expected to set out details of flood risk on-site and means of making it safe without increasing flood risk elsewhere, taking account of climate change over the longer term. In line with the expectations of the *National Planning Policy Framework* and *Planning Practice Guidance*. For development sites in areas at risk of flooding, or for sites greater than 1 hectare this will include a site-specific *Flood Risk Assessment*. Sand and gravel working is considered to be 'water compatible development' and other mineral working and processing is 'less vulnerable'. Buildings and processing plant should not be located in the flood plain.

7.185 Planning applications will be expected to demonstrate how the relevant sequential and exceptions tests have been applied, and how the proposed development is appropriately flood resilient and resistant, safe for its users over the development's lifetime, and will not increase flood risk overall.

7.186 Mitigation will be expected to take a catchment-based approach as well as considering impacts on the local area.

Water quality, quantity and flow

7.187 Water quality refers to the chemical, physical and ecological characteristics of water, generally focusing on the health of ecosystems, safety of human contact and drinking water.

78 Interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

7.188 Water quality can be significantly affected by other aspects of the water environment, for example low water levels can increase the concentration of pollutants, whilst flood waters can transport contaminants.

7.189 The quantity and natural flow of water systems directly affects their quality, biodiversity, the riparian landscape and the availability of supply for all kinds of users. Within groundwater, a concentration of pollutants can continue to rise for years after the pollution sources have been brought under control due to the time it takes for clean recharge water to reach the water table. Abstractions from rivers and groundwaters impact on river flows and groundwater levels.

7.190 Quarrying is an activity that can lead to impacts on the water environment through altered groundwater flows or physically removing aquifers.

7.191 Planning applications will be expected to establish the baseline position and assess the potential for impacts on water quality, quantity and flow through hydrological and hydrogeological assessments. Applications should have due regard to the *Water Framework Directive*.

7.192 The application should set out how the proposed development has been designed and will be monitored and managed at all stages of working, restoration and after-use to:

- avoid significant changes to groundwater or surface water levels or flows, for example, the process of 'dewatering' must be carefully monitored, to ensure no adverse impacts on surrounding water availability; and
- avoid pollution of ground and surface water by chemicals and other contaminants, for example a considerable amount of water can be used when processing aggregates; drainage during site operations and any discharge to local watercourses, must be controlled to comply with standards set by the Environment Agency.

Optimising gains for the water environment

7.193 By proactively designing and delivering integrated green infrastructure, mineral working and restoration has substantial potential to enhance the water environment, for example through:

- restoring or enhancing the naturalness of watercourses, including through creating braided stream beds or adding meanders, which benefit biodiversity and reinstate more natural fluvial-floodplain processes, provide additional channel conveyance or flood storage;
- increasing opportunities for biodiversity through ensuring water bodies incorporate shallow areas and edge habitats;
- reinstating historic water management methods such as water meadows;
- regulating or enhancing watercourse flows using water abstracted during dewatering;
- creating water bodies in keeping with the landscape character which store water for agricultural use in areas with water shortages;
- improving water quality by using biodiverse sustainable drainage systems (SuDS) to capture run-off;
- alleviating flood risk by using quarry voids for water storage; or
- providing safe public access to waterbodies or wetlands with information to support understanding of them.

Long term management for the water environment

7.194 Long term management beyond the statutory five year aftercare period will be required where appropriate, for example to provide means of regulating water levels on restoration. Commitment for such provision will be gained through a planning obligation, as set out in **Policy MLP 26**.

Historic Environment

7.195 The historic environment includes heritage assets such as archaeology, buildings and structures, areas of historic landscape, conservation areas, historic parks and gardens, scheduled monuments and battlefield sites. Many of these features are also reliant upon their setting, with the historic landscape providing the wider context for these features.

7.196 Worcestershire's identity and sense of place is closely linked with its rich heritage. This is an irreplaceable resource which is vulnerable to damage or loss from development, to the asset itself or to its setting.

Policy MLP 23: Historic Environment

Contributing to:

Objective 1 Objective 11 Objective 13

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect and enhance the historic environment.

A level of technical study appropriate to the heritage asset and its setting will be required to demonstrate that the proposed development:

a) will not cause unacceptable harm to or loss of significance of any heritage asset, or its setting, either directly or indirectly, unless there are public benefits that outweigh that harm or loss; and

b) will optimise enhancement of the historic environment, integrating other green infrastructure components where appropriate; and

c) incorporates appropriate long term management of the restored mineral site.

The left tusk of a 50,000 year old juvenile mammoth in a glacial gravel deposit at Clifton Quarry. © WCC Archive and Archaeology Service

Prehistoric and RomanoBritish settlement remains at Pensham revealed as cropmarks in summer arable fields © Mike Glyde

Reasoned justification

7.197 The scale and character of mineral workings means that they can impact on the historic environment in different ways during different phases of working and restoration.

7.198 Whilst the presence and significance of designated heritage assets and those recorded in the Historic Environment Record (HER) are known in advance, some heritage assets, particularly those with archaeological interest, may not be apparent until during the course of the development.

7.199 Mineral workings in Worcestershire have led to significant archaeological discoveries in the past.[79] Carefully designed mineral development also provides a unique opportunity to make a positive contribution to the setting of the historic environment or better reveal the significance of heritage assets.

Protecting heritage assets

7.200 The technical assessment accompanying the planning application will be expected to set out an assessment of the potential impact of proposals on any heritage assets affected by the proposed development, either directly or indirectly. Assessments should take account of the significance of assets and any contribution made by their setting. Where there is potential to impact on heritage assets with archaeological interest this might include a desk-based assessment or field evaluation as appropriate. All assessments should be proportionate to the significance of the asset.

7.201 Historic England has published a number of documents useful to understand the significance of heritage assets and practical advice on how to incorporate the historic environment into sustainable mineral working. One such document is *Mineral Extraction and Archaeology: A Practice Guide*.[80]

7.202 Worcestershire County Council has a range of resources available to understand heritage assets within Worcestershire and as a minimum applications will be expected to refer to the HER.

7.203 Other locally available information should be taken into account. The *Historic Landscape Characterisation* and *Information for Agents and Applicants regarding the Historic Environment and Planning* may provide a starting point.[81] Early consultation with the Mineral Planning Authority and appropriate advisers is encouraged in order to establish the potential for archaeological survival and to enable a robust assessment strategy to be agreed prior to submission of a planning application. The assessment may need to encompass enabling and ancillary works, such as access routes, in addition to the main working area. The assessment will need to be sufficient to enable the significance of the asset and its setting to be understood.

7.204 Substantial harm or total loss of significance of a designated heritage asset will be resisted, unless the developer demonstrates that this is necessary to achieve substantial public benefits that outweighing that harm or loss. Any harm or loss will require clear and convincing justification; this consideration should be made on a case-by-case basis, carefully considering the evidence and case law available at the time.

79 *Archaeology and aggregates in Worcestershire: A resource assessment and research agenda (2007)* Historic Environment and Archaeology Service, Worcestershire County Council and Cotswold Archaeology http://www.worcestershire.gov.uk/downloads/file/6084/archaeology_and_aggregates_in_worcestershire_text.

80 https://www.historicengland.org.uk/images-books/publications/mineral-extraction-and-archaeology/

81 www.worcestershire.gov.uk/archaeology.

7.205 In weighing up applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be made having regard to the scale of any harm or loss and the significance of the heritage asset.

7.206 In areas where remains are relatively abundant and well understood, a new find of a similar nature may or may not add significantly to overall knowledge; something unique or special to that particular environment could be of much greater value. An assessment of importance will need to be based on the merits of the particular site or landscape in question.

7.207 Wet working of mineral sites may not be a viable option where there are potential archaeological assets as this can significantly restrict the delivery of appropriate mitigation measures.

Enhancing the historic environment

7.208 Proposals for mineral development should include a clear strategy for enhancing the character of the historic environment as an integrated part of multifunctional green infrastructure. This might include measures such as:

- protecting or re-instating historic landscape features such as hedgerows, woodland or water meadows;
- reverting to historic land management practices, such as seasonal grazing of water meadows using locally present species to optimise biodiversity gains; or
- providing on-site interpretation of the site and its history in association with publicly accessible areas, where this is does not conflict with the setting of heritage assets.

7.209 Developers will be expected to provide for the recording, preserving and future management of important features in the historic environment.

7.210 *Landscape Character Assessment*[82] and *Historic Landscape Characterisation*[83] are tools that can direct land use change in ways that will take advantage of opportunities to strengthen the character or legibility of the historic environment and thus enhance local distinctiveness.

Long term management for the historic environment

7.211 Long term management beyond the statutory five year aftercare period will be required where appropriate, for example to enable ongoing investigation of an important heritage feature identified through mineral working. Commitment for such provision will be gained through a planning obligation, as set out in **Policy MLP 26**.

A preserved timber well, dated to the early 8th century AD, associated with flax retting and a small, rural linen production industry. © WCC Archive and Archaeology Service

Transport

7.212 Transport movements associated with minerals development, both beyond and within the site, can significantly affect residential amenity and environmental quality. There are many opportunities for the impacts from these movements to be managed to an acceptable level.

7.213 The Mineral Planning Authority expects all planning applications to take a proactive approach to the delivery of sustainable transport. The following policies separately address transportation to and from the development site, and movement within the development site.

Transport to and from site

7.214 Whilst most minerals worked within Worcestershire are transported by road, barges are used on the River Severn to convey sand and gravel from extraction at Ripple Quarry to the processing plant at Ryall House Farm Quarry[84] and on occasion onwards into Gloucestershire. For a short period in 2010 clay was carried on the River Avon from Birlingham to Pershore for building flood defences.

7.215 In delivering sustainable development and avoiding carbon emissions, the Mineral Planning Authority strongly encourages the use of transport that is not road based.

82 http://www.worcestershire.gov.uk/info/20014/planning/1006/landscape_character_assessment/
83 http://www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1062/historic_landscape_characterisation_hlc.
84 Planning permissions (15/000012/CM and 15/000013/CM) were granted in May 2016 for transportation of sand and gravel by barge from extraction at Ryall Court Quarry to the processing plant at Ryall House Farm Quarry.

Policy MLP 24: Transport To and From Site

Contributing to:

Objective 2 Objective 3 Objective 4 Objective 5 Objective 6 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted for mineral development that optimises opportunities for the use of alternatives to road transport, including by means of water, rail, conveyors and pipelines. Road transport would be acceptable where alternative means of transport are not practicable or environmentally preferable.

A level of technical study appropriate to the development proposal will be required to demonstrate that:

a) **the site will be well connected to the strategic transport network; and**

b) **it would not have an unacceptable adverse impact on safety or congestion on the transport network; and**

c) **transport would not have an unacceptable adverse impact on the environment or quality of life along proposed routes; and**

d) **the access arrangements are adequate to support the proposed development and safe for all users, including pedestrians and cyclists.**

Freight Train at Stoke Pound, Near Droitwich courtesy of Adrian Booth

Freight Train at Abbotswood junction, near Worcester © Andrew Smith

Reasoned justification

7.216 **Policy MLP 24** is applicable to all transport movements to and from mineral sites, whether active or restored quarries, processing locations or transport infrastructure. Transport includes employees' and visitors' vehicles and movements generated when minerals or other materials are taken to, or brought in from, elsewhere.

7.217 All transport can have a considerable impact on amenity and the environment, with the potential to affect public safety and to cause inconvenience, noise, vibration and air pollution. Use of modes of transport such as rail, waterways, conveyor, and pipeline can reduce the effects in comparison to road transportation. It may be preferable to transport minerals further by rail or boat than over a shorter distance by road, because of the environmental and amenity benefits of reducing road transportation.

7.218 The *Worcestershire Local Transport Plan*[85] aims to reduce the impacts of transport on the environment, health and quality of life by reducing noise and transport-related carbon and other greenhouse gas emissions, reducing risks from transport, and promoting healthy modes of transport and sensitive design.

Connection to the strategic transport network

7.219 The strategic transport network includes navigable waterways, strategic rail routes and the strategic highway network.

7.220 Development proposals will be expected to include an assessment of connectivity of the site, with specific reference to the potential for using alternatives to road transport. Where alternatives to road transport are not proposed this should be clearly justified.

7.221 The assessment should:

a. Identify the possibilities in relation to:

i. the navigable waterways network;
ii. the strategic rail network;
iii. pipelines;
iv. conveyor systems; and
v. the strategic highway network.[86]

b. Evaluate the capability of connectivity of the site, including:

i. capacity of the local and strategic transport network;
ii. suitability for use of vessels, vehicles, conveyors or pipelines; and
iii. loading and unloading opportunities.

c. Identify how these connections will be used throughout the lifetime of the development.

85 http://www.worcestershire.gov.uk/info/20055/strategies_plans_and_bids/806/the_local_transport_plan.

86 *The Advisory Lorry Route Map for Worcestershire* is available at http://www.worcestershire.gov.uk/info/20007/travel_and_roads/1003/freight/3

Impact on safety or congestion on the transport network

7.222 Planning applications will need to demonstrate the suitability of the transport network to accommodate the traffic that would be generated and that the effect on safety of the transport network is acceptable, including cumulative impacts with other development. Where the restored site is anticipated to attract a significant number of visitors, the potential for sustainable modes of transport should be addressed. A *Travel Plan* may be required to address daily staff and visitor movements to and from the site at different stages of the proposed development.

7.223 Any required improvements, alterations or agreed routes may be secured through the use of planning obligations, as set out in **Policy MLP 26**.

Impact on the environment or quality of life along proposed routes

7.224 All development proposals that generate significant amounts of movement should be supported by either a Transport Assessment or a Transport Statement, dependant on the scale of the development.[87] The document should conclude whether the residual transport impacts of a proposed development are likely to be severe. The number and type of vehicles predicted to access the site across the lifetime of the development should be identified, including the transport of minerals or materials brought to site from elsewhere, for example for use in secondary processing plant.

7.225 A large percentage of the vehicle movements associated with mineral development are heavy goods vehicles, which are likely to be significant in number. It may not always be possible to gain access directly to the strategic road network from a site, but the proposed route should avoid minor roads and settlements.

Access arrangements

7.226 Traffic from the development should be able to access the strategic transport network safely. The transport network should have the capacity to accommodate the type and volume of traffic from the development. This should include satisfactory access and provision for the parking, docking, loading, servicing and manoeuvring of vehicles.

7.227 Taking an integrated approach to design from the outset could also lead to the early identification of features that might be retained in the after-use of the site to promote public access networks or sustainable transport to restored sites. This might include the potential to retain wharves for future use or haul routes to provide cycle links or footpaths.

7.228 There may also be scope to provide other green infrastructure elements from the outset, for example sustainable drainage and planting schemes around visibility splays could be integrated which are compatible with safety considerations.

Transport within mineral sites

7.229 Minerals often need to be moved around within mineral sites, from the point at which they are extracted (the working face) to the processing plant, stockpiles, or areas where they will be treated or used to make product for sale. Other materials may be brought to site and stored prior to their use.

7.230 There are various options available to site operators for the efficient and sustainable movement of minerals and materials within mineral workings.

87 *Planning Practice Guidance*, (revision date 06 03 2014), Paragraph: 004 Reference ID: 42-004-20140306. "Transport Assessments are thorough assessments of the transport implications of development, and Transport Statements are a 'lighter-touch' evaluation to be used where this would be more proportionate to the potential impact of the development (i.e. in the case of developments with anticipated limited transport impacts)." **http://planningguidance.communities.gov.uk/**

Policy MLP 25 : Transport Within Mineral Sites

Contributing to:

Objective 2 Objective 3 Objective 4 Objective 5 Objective 6 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Planning permission will be granted for mineral development where it is demonstrated that the arrangements for the transport of mineral or other materials within the site is sustainable, minimises the potential for adverse impacts and optimises the opportunities for green infrastructure.

Conveyor at Clifton sand and gravel working, Worcestershire

Recycled aggregate at Stanford Highway Depot, Worcestershire

Reasoned justification

7.231 **Policy MLP 25** applies to all movements of minerals and other resources within the site, this includes materials brought to site for purposes including secondary processing and site restoration. The Mineral Planning Authority expects the most appropriate approach to be implemented.

7.232 Conveyors and pipelines offer environmental and amenity benefits over the use of dump trucks as they are generally more energy efficient, generate reduced levels of emissions or fumes and tend to be quieter. They can have a visual impact, appearing as a fixed linear feature in the landscape for the duration of the operation phase, whilst haulage vehicles may be an intermittent occurrence, particularly if the mineral is worked on a campaign basis.[88] Pipelines usually have a lower visual impact than conveyors, but often require material to be mixed with large volumes of water which may not be available for sustainable abstraction and can require substantial settlement lagoons. Drying materials before processing can be energy intensive and costly.

7.233 All internal transport modes and routes need good design to reduce landscape, environmental and amenity impacts. The use of natural attributes, such as following an existing hedgerow, or wooded or lower lying area within the site, should be optimised, whilst sensitive or visually exposed land, or important landscape or historic features should be avoided. Flood risk on-site should be considered to ensure there is a safe route from the working faces to the site exits or refuge point.

7.234 Development proposals should consider which transport mode and route is most appropriate, finding the balance between sustainability, practicability, impacts and safety. The use of conveyors and/or pipelines is preferred where they would be suited to the circumstances and scale of the site and the nature of the material to be moved.

7.235 Considering the site context in the light of green infrastructure principles will often enable an appropriate solution to be found and help to deliver sustainable development. Examples include:

- internal transport routes designed and laid out to provide cycle links or footpaths upon restoration of the site (and earlier where practicable);
- early landscaping of internal transport routes, to enable planting to mature pending restoration of the site; and
- transport routes designed to protect existing wildlife movement and to enhance wildlife corridors.

Delivering sustainable development

7.236 Delivering sustainable mineral development requires a comprehensive approach, looking from the start of operations, through the life of the quarry, and beyond restoration, ensuring a positive legacy remains into the future.

88 Where the mineral is extracted and stockpiled for an intensive and intermittent period, not on an ongoing basis.

Policy MLP26: Sustainable Development Delivery

Contributing to:

Objective 1 Objective 9 Objective 10 Objective 11 Objective 12 Objective 13

Where it is necessary, relevant to planning, directly related to the proposed mineral development, fairly and reasonably related in scale and kind to the proposed development, and reasonable in all other aspects, a planning obligation will be required in order to secure any or all of the following:

a) **infrastructure provision; and**

b) **measures to establish baseline conditions and provide ongoing monitoring; and**

c) **measures to mitigate the effects of development and provide ongoing monitoring; and**

d) **long term management following the statutory 5 year aftercare period; and**

e) **public access; and**

f) **community benefits.**

The planning obligation may either commit the developer to delivering the agreed provision directly or to make a suitable financial contribution to its delivery.

Church Farm East sand and gravel working near Grimley

Broadway Quarry near Fish Hill

Reasoned justification

7.237 Due to the nature and scale of minerals development, it may be necessary to use planning obligations to ensure delivery of key elements of infrastructure and/or long term net-gain to the environment or local communities.

7.238 The Mineral Planning Authority will require developers and/or landowners to enter into planning obligations to make a proposed development acceptable where planning conditions alone would not be appropriate.

Infrastructure provision

7.239 Mineral development may require the provision of infrastructure (including transport, water and energy facilities) and may impact upon the operation of existing infrastructure. The Mineral Planning Authority expects the developer to provide for all works necessary to make the development proposal acceptable. Development should be phased appropriately to take account of critical infrastructure delivery and to positively contribute towards local infrastructure improvements. This could include the provision of green infrastructure, public access and community benefits.

7.240 Developers will be expected to deliver any improvements or alterations to the transport network required as a result of the proposed development; or to make an appropriate financial contribution to enable the work to be carried out.

Mitigation and monitoring

7.241 It may be necessary to establish baseline conditions, monitor any changes caused by mineral working, or implement mitigation measures and monitor their success during the life of a mineral working. In circumstances which cannot be managed through planning conditions, a planning obligation may be required. The developer will be expected to provide for such measures and for any remedial action reasonably required.

7.242 Developers will be expected to provide for the recording, preserving and future management of important features in the natural and historical environment, such as archaeological, geological or geomorphological, ecological or water features as appropriate to the development proposal.

Processing at Ryall sand and gravel working

Long term management

7.243 The Mineral Planning Authority does not consider the developer's accountability ends with restoration and statutory aftercare as restoration schemes will generally require longer than five years to become fully established and recognised as functional. This is particularly the case for new or restored habitats, water features and landscapes. Permissive paths should also be retained and maintained for the agreed period of time.

7.244 Such restoration schemes are often not self-funding. Where appropriate, planning obligations will be sought in order to secure the afteruse, long term management and maintenance of the site and any associated land.

Public access

7.245 Public access to the countryside is important for quality of life and well-being; mineral sites can make a valuable contribution to this resource. Planning obligations will be sought in order to secure the long term availability and maintenance of public access to appropriate areas within mineral workings and restored sites (See also: **Policy MLP 17**).

7.246 Conversely, it may be necessary to restrict public access across some areas, for example due to safety hazards or to protect sensitive habitats. Planning obligations may also be sought to ensure appropriate provision is made and maintained to restrict public access from identified areas.

7.247 Planning obligations will be used to secure compensatory provision in the event that public rights of way or publicly accessible green spaces are subject to closure.

Community benefits

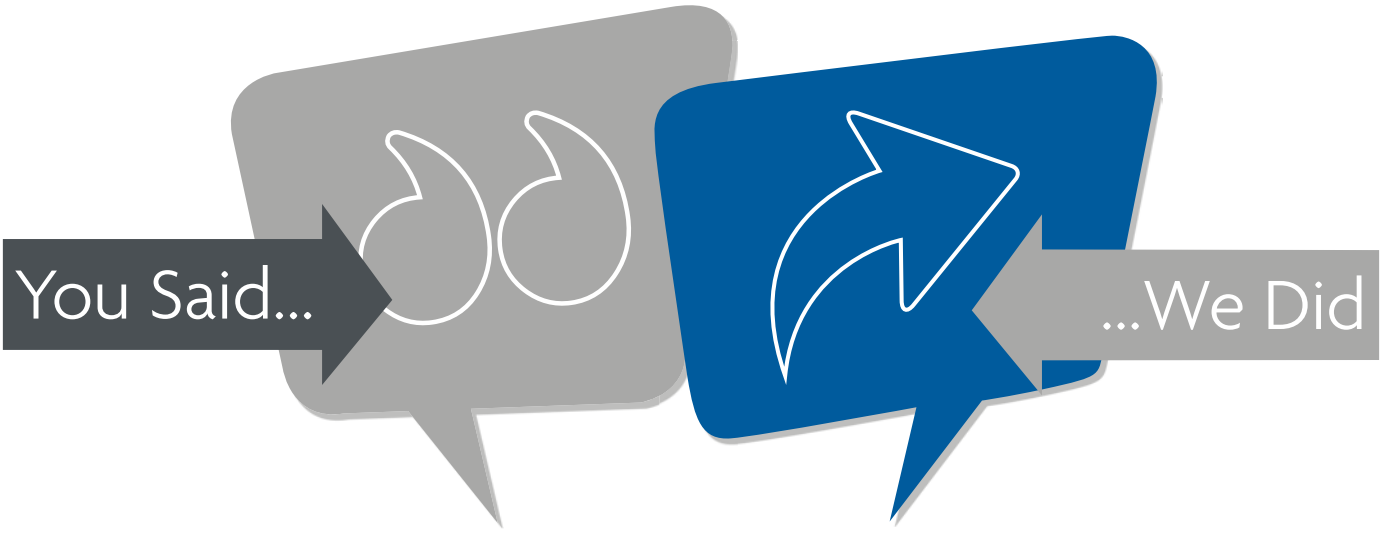
7.248 To help redress the burden placed on local communities throughout the life of mineral workings, minerals development will be expected to plan positively for the provision and use of shared space, community facilities and other local services to enhance the sustainability of communities and residential environments.

7.249 Wherever possible, development should add value by considering the opportunities or benefits that can be provided, for example through design to help meet local community aspirations.

7.250 Planning obligations may be sought to secure the provision, and where appropriate maintenance, of community benefits. Such contributions are not limited to the restoration phase and should be made at the earliest opportunity.

Beckford Nature Reserve, Worcestershire: a community run nature reserve at a former sand and gravel working.

Developing the Third Stage Consultation



The *Second Stage Consultation on the Minerals Local Plan*[1] identified 30 policy issues to be considered under the headings of:

- Sustainable supply of mineral resources,
- Impacts on health, amenity and Worcestershire's key economy,
- Transport,
- Sustainable design and operation,
- Natural and historic environment and
- Open and effective engagement

The *Second Stage Consultation* proposed to enable new mineral development in locations where issues relating to sustainable transport, climate change, natural and historic environment, infrastructure and aviation safety would be adequately addressed, identifying the need to consider the potential cumulative effects of development.

The consultation responses and the *Initial Sustainability Appraisal*[2] supported the issues proposed and provided valuable information about how they could be addressed including references to legislation, national and local policy and best practice advice. These extensive comments have contributed significantly to the development of the policies and reasoned justification in this *Third Stage Consultation*.

Many of the comments received and the comments in the *Initial Sustainability Appraisal*[3] echoed the responses to the **Vision** and **Objectives** with consultees emphasising the need to consider the distinctive characteristics and features in the county and the need for environmental enhancement, including net biodiversity gain and flood betterment. The need to consider the whole life of the development was also raised by a range of consultees.

The *Third Stage Consultation on the Minerals Local Plan* proposes policies to address issues over the life of the site rather than including separate policies for working and restoration phases. This is intended to enable opportunities for protection and enhancement of green infrastructure and consideration of impacts on well-being to be integrated throughout the life of a site (other aspects of the restoration chapters in the *Second Stage Consultation on the Minerals Local Plan*[4] are now addressed through the **spatial strategy** in this *Third Stage Consultation* document).

1 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".
2 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* available at **www.worcestershire.gov.uk/mineralsbackground.**
3 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* available at **www.worcestershire.gov.uk/mineralsbackground.**
4 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".

The consultation responses and the *Initial Sustainability Appraisal*[5] both expressed concern about the apparent lack of protection given to the Malvern Hills and Cotswolds Areas of Outstanding Natural Beauty. This has been addressed in the *Worcestershire Minerals Local Plan Third Stage Consultation*.

In the *Second Stage Consultation on the Minerals Local Plan*[6] some concern was expressed about the intention not to apply a buffer around sensitive receptors. The Mineral Planning Authority has taken this into account when developing the policies proposed in the *Worcestershire Minerals Local Plan Third Stage Consultation* but considers that the policies set out provide a more sophisticated and robust approach to protection and enhancement than could be achieved through the application of a buffering approach.

5 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* available at **www.worcestershire.gov.uk/mineralsbackground**

6 Worcestershire County Council, *Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014*, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".

Third Stage Consultation on the Minerals Local Plan: Consultation Questions

Q7.1 Do the policies and the reasoned justification contribute towards the achievement of the Vision, Objectives and Spatial Strategy?

Q7.2 Do the policies and the reasoned justification provide sufficient clarity as to how the policy would be applied?

Q7.3 Are there any wording changes which you would suggest to Chapter 7 to improve clarity or any other issues which you think should be considered?

A borrow pit was utilised for flood defences at Powick, near Worcester.

8. Safeguarding minerals and supporting infrastructure

8.1 A key aspect of sustainable development is the conservation and safeguarding of non-renewable resources for future generations. Minerals are finite, non-renewable resources and can only be worked where they are found. In order to secure the steady and adequate supply of minerals for the future, it is important to safeguard locally and nationally important mineral resources, permitted mineral sites and supporting infrastructure from needless sterilisation by other development.[1,2]

8.2 Development can "sterilise" mineral resources (make them inaccessible for potential extraction) or prejudice the operation of minerals sites and supporting infrastructure. This can be either:

- **directly:** for example by building over land that contains minerals; or
- **indirectly:** for example through the introduction of sensitive land uses in close proximity to these resources or sites.

8.3 Mineral safeguarding is not about preventing development, but about planning ahead. It allows for the effective consideration of potential impacts and helps to ensure that non-minerals developments are appropriately located and designed. It can also help to reduce the need for new quarries through prudent use of resources. However, safeguarding mineral resources does not create a presumption that the resources defined will be worked during the lifetime of the Minerals Local Plan.

Development exempt from mineral safeguarding requirements

8.4 Certain types of development are unlikely to cause needless sterilisation. To avoid creating an unnecessary barrier to those developments, the following types of development are exempt from **Policy MLP 27** and **Policy MLP 28** and will not need to consider mineral safeguarding requirements:

a) Sites allocated in adopted Local Plans

Mineral safeguarding considerations will have been raised during the development of the Local Plan and addressed prior to site allocation.

1 Communities and Local Government (2012) *National Planning Policy Framework* (paragraph 143)
2 Communities and Local Government (2014) *Planning Practice Guidance* (paragraphs 002-006)

b) Sites allocated in Neighbourhood Development Plans[3]

Mineral safeguarding considerations will have been raised during the development of the Neighbourhood Plan and addressed prior to site allocation.

c) Minor development within the curtilage of existing buildings such as:

- replacement buildings
- altered design of buildings
- extensions to existing buildings
- provision of driveways, garages, car parks, hard standings and non-habitable structures

Minor development within the curtilage of an existing building is very unlikely to increase the risk of sterilising a mineral resource.

d) Demolition of buildings

Demolition of a building is very unlikely to increase the risk of sterilising a mineral resource, although any associated redevelopment may need to consider mineral safeguarding requirements.

e) Applications for advertisement consent

Such proposals are very unlikely to increase the risk of sterilising a mineral resource.

f) Applications for Listed Building consent

Any development of a Listed Building significant enough to increase the risk of sterilising a mineral resource would be accompanied by a separate planning application which may trigger the need to consider mineral safeguarding requirements.

g) Proposals for work to trees or removal of hedgerows

Such proposals are very unlikely to increase the risk of sterilising a mineral resource.

h) Prior notifications

These are a matter of legal fact and do not present an opportunity to comment on mineral safeguarding matters.

i) Certificates of Lawfulness of Existing Use or Development (CLEUD)

These are a matter of legal fact and do not present an opportunity to comment on mineral safeguarding matters.

j) Certificates of Lawfulness of Proposed Use of Development (CLOPUD)

These are a matter of legal fact and do not present an opportunity to comment on mineral safeguarding matters.

3 Neighbourhood Development Plans that are in accordance with *National Planning Policy Framework*, *Planning Practice Guidance* and the *Localism Act*. http://planningguidance.communities.gov.uk/blog/guidance/neighbourhood-planning/ ID: 41Updated: 19 05 2016

Processing plant at Clifton Quarry, Worcestershire

Safeguarding locally and nationally important mineral resources

Policy MLP 27: Safeguarding Locally and Nationally Important Mineral Resources

Contributing to:

Objective 3 Objective 4 Objective 5 Objective 6 Objective 7 Objective 9 Objective 10 Objective 11 Objective 12

Worcestershire's locally and nationally important mineral resources[4] will be safeguarded against needless sterilisation by non-minerals development. A Mineral Resource Assessment will be required for all non-exempt development[5] proposed within or partially within the identified Mineral Resource Consultation Areas[6] to prove:

i) whether the proposed development would result in sterilisation of some or all of the resource; and

ii) whether the mineral resource is of economic value.

a) Where it is demonstrated that no sterilisation would occur or the mineral resource is not of economic value, no further mineral safeguarding action will be required.

b) Where sterilisation of some or all of an economically valuable mineral resource could occur:

i) if the long term economic value of the mineral resource outweighs the merits of the proposed non-exempt development, the mineral resource must be either:

- retained in-situ and the proposed development refused; or
- extracted, either in advance of development taking place or in phases alongside the development.

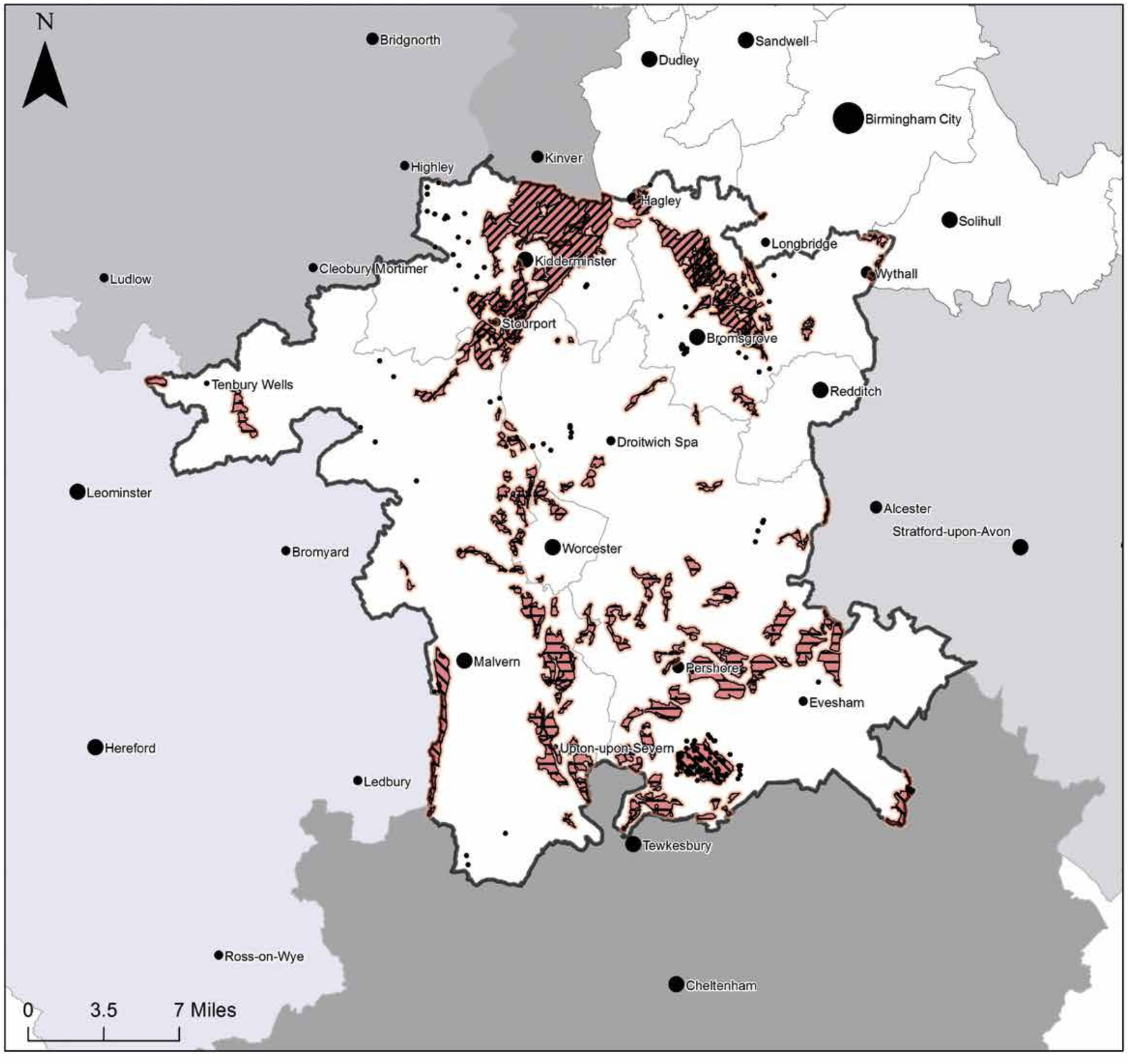
ii) if the merits of the proposed non-exempt development outweigh the long term economic value of the mineral resource, opportunities must be optimised for the extraction of the mineral resource, either in advance of development taking place or in phases alongside the development.

c) Where extraction of a safeguarded mineral resource required under part b would be more extensive than "incidental recovery",[7] conditions or planning obligations must be put in place to prohibit implementation of the proposed non-exempt development until a separate minerals planning permission has been implemented and is sufficiently advanced.[8]

d) Where extraction of a safeguarded mineral resource required under part b would be limited to "incidental recovery",[9] conditions or planning obligations must be put in place to define, require and control mineral extraction as part of the proposed non-exempt development.

4 Identified as **Mineral Resource Safeguarding Areas** on **Figure 8.1** and the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
5 All types of development other than those identified as exempt in paragraph 8.4 above are considered to be non-exempt development.
6 **Mineral Resource Consultation Areas** are identified on **Figure 8.1** and the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
7 As defined in paragraph 8.21
8 As defined in paragraph 8.22
9 As defined in paragraph 8.21

Figure 8.1 Mineral Resource Safeguarding and Consultation Areas



Legend

Mineral Resource Safeguarding Areas

- Terrace and Glacial Sand and Gravel
- Solid Sand
- Crushed Rock
- Clay
- Building Stone

Mineral Resource Consultation Areas

- 50m
- 100m
- 150m
- 200m
- 250m

Reasoned justification

8.5 Safeguarding mineral resources requires a balance to be struck between protecting finite resources as a source of supply for the future, and placing a realistic level of burden on both developers and local authorities. Developers should not be expected to spend time and money undertaking Mineral Resource Assessments unless there is a reasonable likelihood that the nearby mineral resources are of local or national importance.

Locally and nationally important mineral resources

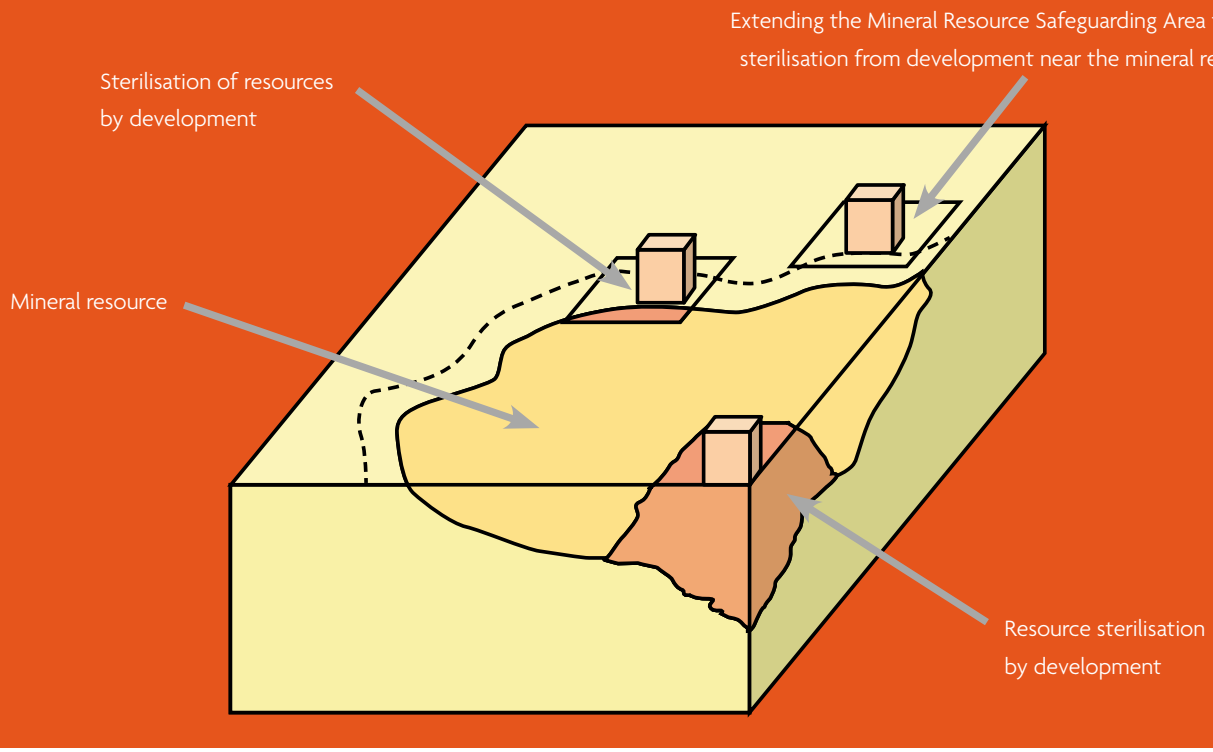
8.6 The following mineral resources have been identified as the locally and nationally important mineral resources in Worcestershire which need to be safeguarded:

- key and significant terrace and glacial sand and gravel resources,[10]
- key and significant solid sand resources,[11]
- key and significant crushed rock resources,[12]
- an area of Mercia Mudstone Group brick clay close to the Hartlebury and Waresley brickworks,[13] and
- former building stone quarries[14].

8.7 These locally and nationally important mineral resources have been designated as **Mineral Resource Safeguarding Areas** in **Figure 8.1** and can be viewed on the interactive minerals mapping tool[15]. This includes resources which fall outside of the **strategic corridors**, as they could be valuable resources for the future even though they are not the preferred resources to achieve the objectives of this Minerals Local Plan.

8.8 It is important that development within **Mineral Resource Safeguarding Areas** is scrutinised to ensure that the impact on locally and nationally important mineral resources is fully considered, but it is equally important to consider whether development beyond the mineral resource itself but in the vicinity could result in sterilisation of the resource, as shown in **Figure 8.2**.

Figure 8.2. The sterilisation of near surface mineral resource by surface development[16]



10 As identified in the background document *"Analysis of Mineral Resources in Worcestershire"*, available at www.worcestershire.gov.uk/minerals.
11 As identified in the background document *"Analysis of Mineral Resources in Worcestershire"*, available at www.worcestershire.gov.uk/minerals.
12 As identified in the background document "Analysis of Mineral Resources in Worcestershire", available at www.worcestershire.gov.uk/minerals.
13 Proposed for safeguarding by Wienerberger Ltd. The Mercia Mudstone Group is extensive in Worcestershire and comments received on the Second Stage Consultation on the Minerals Local Plan indicated that it would not be appropriate to safeguard the whole of the formation.
14 As identified by Herefordshire and Worcestershire Earth Heritage Trust's project *"A Thousand Years of Building with Stone"*, http://www.buildingstones.org.uk/
15 The interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals.
16 Adapted from British Geological Survey and The Coal Authority (2011) *"Mineral safeguarding in England: good practice advice"*, Figure 2

8.9 **Mineral Resource Consultation Areas** have therefore been defined in **Figure 8.1** to a distance of 250m around the **Mineral Resource Safeguarding Areas** and can be viewed on the interactive minerals mapping tool[17]. Different types of development are likely to have a different level of impact on the resource, and a distance of 250m reflects the balance between the need to protect mineral resources and the need for a proportionate approach.

Minerals resource assessment

8.10 Planning applications for all non-exempt development[18] proposed within or partially within the **Mineral Resource Consultation Areas** will need to be accompanied by a *Mineral Resource Assessment*, and the city, borough and district councils in Worcestershire should include this requirement in their list of validation requirements. The assessment must be carried out by a suitably qualified and competent person and will be expected to contain a level of detail proportionate to the proposed development and the type of mineral resource.

8.11 In order to sufficiently demonstrate the level of likely impact on and the economic value of the resource, desk-based and site-based assessment will be required:

Desk-based assessment:

- for aggregates, Worcestershire County Council's *Analysis of Mineral Resources in Worcestershire*[19] provides the baseline for this, but may need to be supplemented with further information;
- for other types of mineral, this may comprise data from geological memoirs, technical reports or mining plans on the thickness and quality of geological deposits, and information on local mining and quarrying history.[20]

Site-based assessment to supplement and verify desk-based findings:

- techniques may include test pits, exploratory drilling, and geophysical survey.

8.12 The *Mineral Resource Assessment* must be sufficient to establish the depth, quality and extent of the resource. This should refer to whether the resource is of sufficient quality for the mineral to be used in relation to standard specifications.

8.13 It is expected that the applicant will have consulted with the minerals industry, either individual operators or relevant trade associations, as well as the Mineral Planning Authority, to verify the conclusions of the assessment.

8.14 The results of the *Minerals Resource Assessment* could have a significant impact on the design of and timescales for the proposed development, and should therefore be shared with the Mineral Planning Authority as a matter of urgency.

8.15 Should the *Minerals Resource Assessment* result in the underlying mineral resource not being considered economically viable either at the present time or for the foreseeable future, the applicant should still submit the findings of these investigations to ensure transparent communication of the justification for not safeguarding the identified mineral resource.

8.16 A lack of interest from mineral operators to work the mineral resource will not be considered to be sufficient evidence that the resource is not of economic value for the future.

Prior extraction of mineral resources

8.17 It will be a matter of planning judgement by the decision taker as to whether the long-term economic value of the mineral resource outweighs the merits of the proposed development, and the views of the Mineral Planning Authority will need to be given significant weight in making this balanced judgement.

8.18 In some cases, the scale of the mineral resource and its potential to provide strategic options for the delivery of a steady and adequate supply of minerals in the future could mean the resource is deemed to be of strategic importance, or the particular qualities of the resource may mean that it is strategically or economically significant and cannot easily be found or worked elsewhere. In these cases, the economic value of the mineral resource is likely to be considered to outweigh

17 The interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals.
18 All types of development other than those identified as exempt in paragraph 8.4 above are considered to be non-exempt development.
19 Worcestershire County Council (2016) *"Analysis of Mineral Resources in Worcestershire"*, available at www.worcestershire.gov.uk/minerals.
20 Information from the British Geological Survey will provide a starting point, see http://www.bgs.ac.uk/products/minerals/home.html.

the need for the proposed development meaning that the resource must be preserved in-situ or be fully extracted. If extracted, measures should be put in place to ensure that the full potential of the resource can be realised, which may include stockpiling for future use rather than being sold immediately for lower grade uses.

8.19 However, in the majority of cases, safeguarding a mineral resource is unlikely to mean that the mineral deposit must remain in-situ or that the site could not be developed. In these cases, planning applications will be expected to demonstrate serious consideration of how to optimise the use of the mineral resource.

8.20 In order that Worcestershire's limited natural resources are used prudently, the *Minerals Resource Assessment* accompanying the planning application will be expected to evaluate how to optimise opportunities for extraction of the mineral resource. This should take a sequential approach to considering the following possible outcomes:

1) extracting all of the resource within the proposed development site and in the area which would potentially be sterilised by the development (see **Figure 8.2**), either in advance of development taking place or in phases alongside the development; or

2) where extracting all of the resource would prevent a suitable landform for subsequent development, consider whether a proportion of the resource could be extracted; or

3) as a last resort if neither 1 or 2 above is possible, consider whether any opportunities exist for "incidental recovery" of the mineral resource.

Where some or all of the mineral resource is to be extracted, this needs to be considered at the earliest stages of developing the design and phasing of the development. Working minerals could potentially provide raw building materials sourced on-site, or an additional source of income from the development, and may affect the final landform available for development. Consideration from the outset could offer opportunities to deliver high quality design through appropriate landscaping, the integration of physical features and green infrastructure into site design.

8.21 "Incidental recovery" of the mineral resource would involve recovering a portion of the mineral as an integral part of the groundworks for the non-mineral development, such as recovering material removed in landscaping, footings, or creating sustainable drainage schemes. Any extraction above and beyond this will not be considered to be "incidental recovery" and a separate minerals planning permission will be required. Planning conditions will be imposed and planning obligations may be required to manage the relationship between the minerals extraction and subsequent development.

8.22 Where minerals extraction will be controlled by a separate minerals planning permission, extraction will need to be sufficiently advanced before subsequent development can commence. This will need to be assessed on a case by case basis. In some cases "sufficiently advanced" will mean that the minerals permission will need to be fully completed, but in other cases it may be possible to phase the two developments so that some development can take place before extraction is fully completed. Campaign working and stockpiling of the mineral resource may help to minimise the timescale for the mineral to be worked. The Mineral Planning Authority and relevant Local Planning Authority will need to be involved in discussions from the outset.

Processing aggregates at Clifton sand and gravel working

Safeguarding permitted mineral sites and supporting infrastructure

Policy MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure

Contributing to:

Objective 2 Objective 3 Objective 4 Objective 5 Objective 6 Objective 7 Objective 9 Objective 10 Objective 12

Worcestershire's permitted mineral sites[21] and supporting infrastructure[22] will be safeguarded against needless sterilisation by non-minerals development. A Mineral Infrastructure Assessment will be required for all non-exempt development[23] proposed within or partially within the identified **Mineral Infrastructure Consultation Areas**[24] to prove whether the proposed development would result in an unacceptable impact on:

i) the continued operation of a permitted mineral site;

ii) the successful restoration of a permitted mineral site; or

iii) the continued operation of supporting infrastructure.

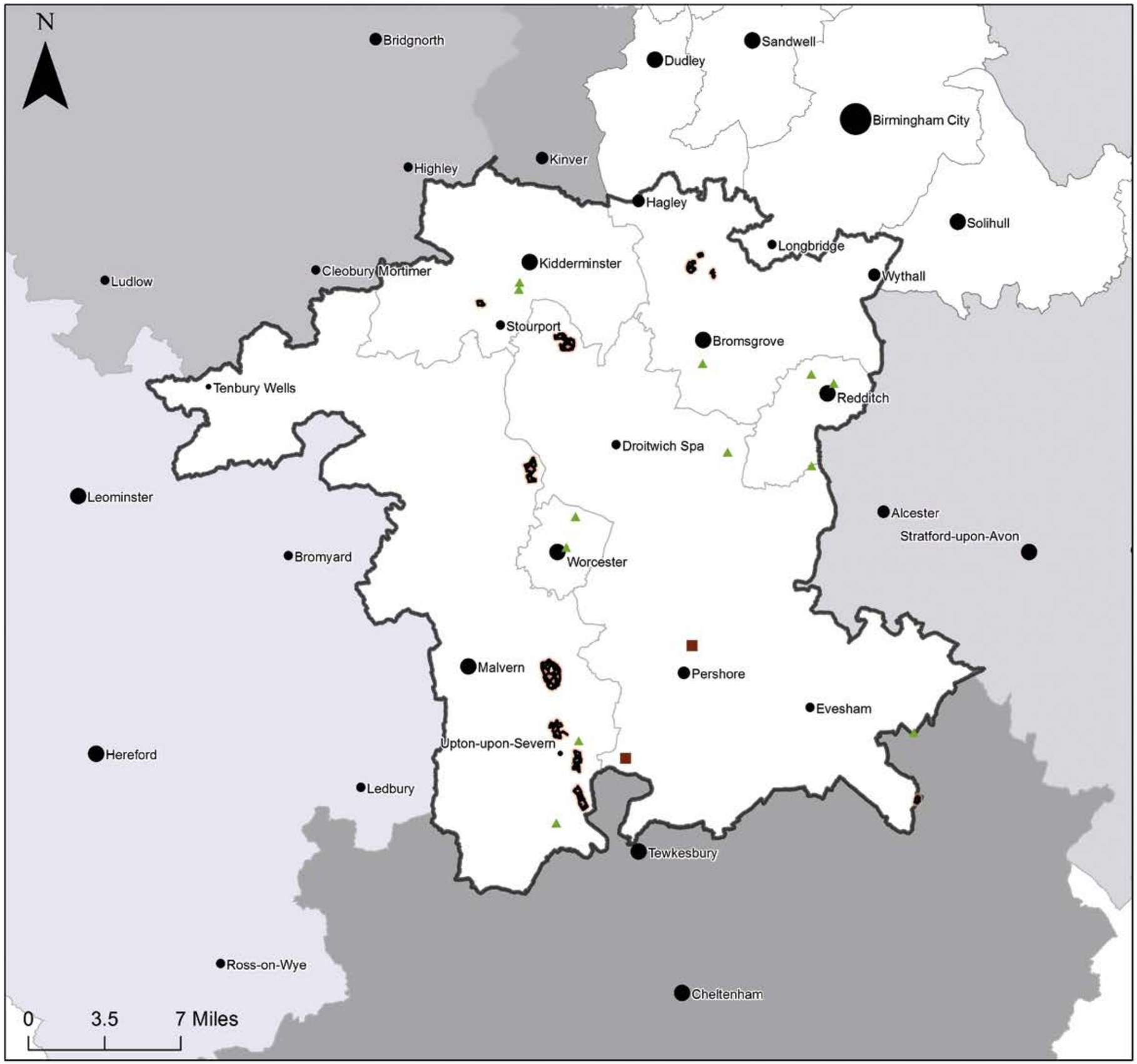
a) Where it is demonstrated that no unacceptable impact on the mineral site or supporting infrastructure would occur, no further mineral safeguarding action will be required.

b) Where an unacceptable impact on the operation or restoration of the mineral site or supporting infrastructure could occur, the proposed non-exempt development must be refused unless it is demonstrated that the impacts will be satisfactorily mitigated.

21 Identified as **Mineral Infrastructure Safeguarding Areas** in **Figure 8.3** and the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
22 Identified as **Mineral Infrastructure Safeguarding Areas** in **Figure 8.3** and the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
23 All types of development other than those identified as exempt in paragraph 8.4 above are considered to be non-exempt development.
24 **Mineral Infrastructure Consultation Areas** are identified in **Figure 8.3** and the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

Wharfage for the transportation of sand and gravel on the River Severn

Figure 8.3 Mineral Infrastructure Safeguarding and Consultation Areas



Legend

Mineral Infrastructure Safeguarding Areas

- Mineral Sites
- Wharfage

Batching Plant

Plant type

- Asphalt
- Concrete

Mineral Infrastructure Consultation Areas

- 50m
- 100m
- 150m
- 200m
- 250m

Reasoned justification

8.23 Securing a steady and adequate supply of mineral resources requires putting safeguards in place to ensure that permitted minerals sites and existing, planned and potential storage, handling and transport sites are available should they be needed and are not adversely impacted by sensitive or inappropriate development that would conflict with the use of sites identified for these purposes.

Permitted mineral sites and supporting infrastructure

8.24 Sites with extant mineral planning permissions are critical to Worcestershire's ability to supply the demand for minerals. It is equally important that sites undergoing restoration and those in aftercare phases are safeguarded so that they are able to achieve the end state envisioned when planning permission was granted. The following categories have been developed for mineral sites in Worcestershire to indicate their operational status:

- **active:** primary minerals site in production for some time during the year;
- **inactive:** primary minerals site worked in the past and contains permitted reserves;
- **permitted – not commenced:** primary minerals site planning permission granted but development not yet commenced;
- **undergoing restoration:** primary minerals site whose reserves are exhausted and restoration is taking place;
- **restored – in aftercare:** primary minerals site where reserves are exhausted, restoration is substantially complete and the site is in managed aftercare.

8.25 Storage, handling and transport sites form the infrastructure which supports the production and distribution of minerals. It is therefore crucial to not only safeguard mineral resources and sites, but also any existing, planned and potential supporting infrastructure.[25] This supporting infrastructure includes:

- rail heads and any associated storage;
- rail links to quarries and any associated storage;
- wharfage and any associated storage;
- handling and processing facilities for the bulk transport by rail, sea or inland waterways of minerals, including recycled, secondary and marine-dredged materials;
- sites for concrete batching, the manufacture of coated materials, other concrete products; and
- sites for the handling, processing and distribution of substitute, recycled and secondary aggregate material;

8.26 Mineral sites and supporting infrastructure in the above categories have therefore been designated as **Mineral Infrastructure Safeguarding Areas** in **Figure 8.3**[26]. However, the number and status of sites will alter over time as planning permissions are granted, reserves are exhausted and sites restored, or planning permissions lapse which have not been implemented. Sites will therefore be added to the interactive minerals mapping tool available at **www.worcestershire.gov.uk/minerals** and designated as **Mineral Infrastructure Safeguarding Areas** as planning permission is granted, and the status of sites will be reviewed and updated annually as part of the *Annual Monitoring Report*.[27]

8.27 It is important that any development proposal within **Mineral Infrastructure Safeguarding Areas** is scrutinised to ensure that the impact on mineral sites and supporting infrastructure is fully considered, but it is equally important to consider whether development in the vicinity could conflict with these sites.

8.28 **Mineral Infrastructure Consultation Areas** have been defined on **Figure 8.3** to a distance of 250m around the **Mineral Infrastructure Safeguarding Areas** and can be viewed on the interactive minerals mapping tool[28]. Different types of development may or may not conflict with the use of the mineral site or supporting infrastructure. The potential for conflict is a function of both the sensitivity of the land use or receptors at the proposed non-exempt development and the techniques or processes employed at those sites. A distance of 250m reflects the balance between the need to protect mineral sites and supporting infrastructure and the need for a proportionate approach.

25 "Existing" meaning operational sites with extant planning permissions, "planned" meaning sites with planning permission which has been granted but not yet been implemented, and "potential" meaning allocated in adopted Development Plan Documents.
26 Identified as **Mineral Infrastructure Safeguarding Areas** in **Figure 8.3** and the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.
27 See the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals and the *Annual Monitoring Report* www.worcestershire.gov.uk/amr.
28 The interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals.

Mineral infrastructure assessment

8.29 Planning applications for all non-exempt development[29] proposed within or partially within the **Mineral Infrastructure Consultation Areas** will need to be accompanied by a *Mineral Infrastructure Assessment*, and the city, borough and district councils in Worcestershire should include this requirement in their list of validation requirements. The assessment must be carried out by a suitably qualified and competent person and will be expected to contain a level of detail proportionate to the proposed development and the type and status of the mineral site or supporting infrastructure.

8.30 In order to sufficiently demonstrate the level of likely impact on a mineral site or supporting infrastructure, applicants will need to assess whether the normal operation of the mineral site or supporting infrastructure could have adverse impacts on the proposed land use or any users of the proposed development. This should include consideration of issues addressed in the Development Management policies of the Minerals Local Plan, including but not limited to any noise, vibrations, dust, or fumes that may result from the normal operation of the site, and could lead to complaints which could jeopardise the continued operation of the mineral site or supporting infrastructure if potential impacts are not considered in advance.

8.31 If the potential impacts are considered in advance as part of the design and development of the proposal, it may be possible to minimise conflict between the existing mineral site or infrastructure operation and the proposed development. Techniques such as considered design, site layout and landscaping or screening of the proposal may in some cases be adequate to mitigate any impacts. Where the mineral site or supporting infrastructure facility is operating within the conditions of their planning permission and the requirements of the pollution control regime, any required mitigation will be the responsibility of the developer of the proposed new development.

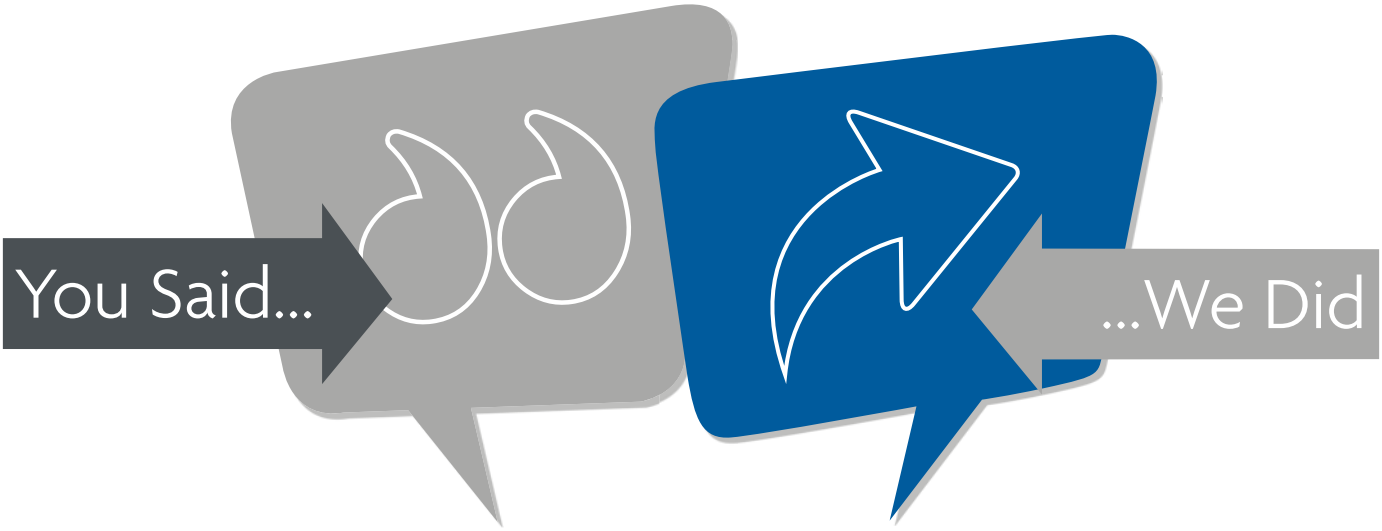
8.32 It is expected that the applicant will have consulted with the site operator and any relevant trade association, as well as the Mineral Planning Authority, to verify the conclusions of the assessment.

8.33 The results of the *Mineral Infrastructure Assessment* could have a significant impact on the design of and timescales for the proposed development, and should therefore be shared with the Mineral Planning Authority as a matter of urgency.

29 All types of development other than those identified as exempt in paragraph 8.4 above are considered to be non-exempt development.

Retreat Farm sand and gravel working, near Grimley, Worcester

Developing the Third Stage Consultation



The safeguarding policies in this *Third Stage Consultation* have been developed with regard to the comments received in response to the *Second Stage Consultation on the Minerals Local Plan*[1], the *Initial Sustainability Appraisal,*[2] national and local planning policy and best practice[3]. Lessons learnt by the Mineral Planning Authority in commenting on applications for non-minerals development have also influenced the development of the policies.

Safeguarding mineral resources

The *Second Stage Consultation on the Minerals Local Plan* proposed different approaches to the safeguarding of the following mineral resources:

- building stone
- clay
- salt and brine
- silica sand
- coal
- hydrocarbons
- aggregates

The responses to that consultation and national and local policy and context have been taken into account in developing the approach in this *Third Stage Consultation*.

Building stone:

The *Second Stage Consultation* proposed to safeguard the quarries identified in the *English Heritage Strategic Stone Study*. Eight of the ten consultees responding to this question supported that approach and the *Initial Sustainability Appraisal*[4] concluded that this approach appeared to be comprehensive, but also stressed the importance of local expertise in confirming that all relevant assets which contribute to Worcestershire's distinctiveness are identified. Other consultees also questioned whether the information in the study was robust enough to be used for this purpose. This has been taken into account in developing the *Worcestershire Minerals Local Plan Third Stage Consultation*.

Due to the robustness of the data and the local and specific characteristics of building stone, the *Worcestershire Minerals Local Plan Third Stage Consultation* does not propose to identify quarries in the *English Heritage Strategic Stone Study* as resources for mineral safeguarding. The Herefordshire and Worcestershire Earth Heritage Trust has developed more robust data in its project *A Thousand Years of Building With Stone*, and this data has been used as the basis for safeguarding building stone resources in this *Third Stage Consultation*.

1 Worcestershire County Council, Second Stage Consultation Minerals Local Plan Consultation Response Document 2013 – 2014, available at **www.worcestershire.gov.uk/minerals** under "Previous Consultation Stages".

2 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

3 Including: British Geological Survey (2011) Mineral and Waste Programme Open Report OR/11/046 Mineral safeguarding in England: good practice advice **https://www.bgs.ac.uk/downloads/start.cfm?id=2069**

4 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

Clay:

The *Second Stage Consultation on the Minerals Local Plan* presented two alternatives:

a) identifying all Mercia Mudstone in the county as a resource to be safeguarded; or

b) not identifying any clay resource in the county for safeguarding.

The consultation document expressed support for option a) and responses received indicated a small preference towards this alternative. The *Initial Sustainability Appraisal*[5] suggested that the proposed policy approach could potentially hinder economic and social development particularly in areas which need to accommodate significant housing and employment growth, and favoured a more refined and proportionate approach to safeguarding clay.

When revisiting the geological information it became clear that there was no justification for safeguarding the entire extent of Mercia Mudstone in Worcestershire as a resource of national or local significance. Mercia Mudstone is widespread across Worcestershire and many other areas of the country and the geological information about the quality of the Mercia Mudstone in Worcestershire away from the current workings is not sufficient to draw such conclusions.

Specific areas identified by the minerals industry have been used as the basis for safeguarding clay resources in *Worcestershire Minerals Local Plan Third Stage Consultation.*

Salt and brine:

The *Second Stage Consultation on the Minerals Local Plan* proposed not to identify any salt and brine resources in the county for safeguarding. This approach was supported and there is no evidence to change the stance in the *Worcestershire Minerals Local Plan Third Stage Consultation*.

Silica sand:

The *Second Stage Consultation on the Minerals Local Plan* proposed not to safeguard silica sand for industrial uses specifically, but to include it as part of the provision for safeguarding solid sand deposits. 6 out of 8 responses agreed with this approach. The *Initial Sustainability Appraisal*[6] raised concerns that this material was not being safeguarded for industrial use, which would not restrict its use as aggregate, however the Mineral Planning Authority has been unable to identify silica sand as a separate resource within solid sand deposits and no alternatives were suggested through the consultation.

The *Third Stage Consultation* therefore takes the same approach as that taken in the *Second Stage Consultation on the Minerals Local Plan*.

Coal:

The *Second Stage Consultation on the Minerals Local Plan* proposed to identify safeguarding areas for coal which are defined by the Coal Authority. This approach was generally supported and, given the limited extent of the areas identified, the *Initial Sustainability Appraisal*[7] did not consider it to have significant impacts on social or economic development. However in response to the consultation the Coal Authority informed the Mineral Planning Authority that "in the latest data issue there is no surface coal resource identified in Worcestershire County, due to the definitions being slightly different between the datasets" and suggested that this be reflected in the approach taken. As such the *Third Stage Consultation* does not propose to safeguard coal resources.

Hydrocarbons:

As hydrocarbons are not known to exist in the county, the *Minerals Local Plan Second Stage Consultation* did not consider it appropriate or possible to consider any safeguarding measures. This was supported in the *Initial Sustainability Appraisal*[8] *and* there is no evidence to change the approach in this *Third Stage Consultation*.

Aggregates:

The *Second Stage Consultation on the Minerals Local Plan* presented three alternatives for safeguarding aggregates:

a) identify all aggregate resources shown on BGS digital maps as safeguarding areas;

b) identify all aggregate resources above 10ha in size and 200m width as safeguarding areas;

c) identify those aggregate resource areas assessed to be "key" or "significant" in the *Analysis of Mineral Resources in Worcestershire*[9] as safeguarding areas.

5 Worcestershire County Council (2013) Worcestershire *Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

6 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

7 Worcestershire County Council (2013) Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

8 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

9 As identified in the background document Analysis of Mineral Resources in Worcestershire, available at **www.worcestershire.gov.uk/minerals.**

Results were mixed, although option c) received a slightly higher level of support and lower level of opposition than the other alternatives. The *Initial Sustainability Appraisal*[10] states that an argument could be made in favour of option c) but that the consultation document fell short of fully justifying this approach.

Option c) was identified as the Mineral Planning Authority's preferred approach in the *Second Stage Consultation* as the best balance between safeguarding mineral resources and avoiding undue burden on developers. There is no evidence to change this approach. Option c) has therefore been used as the basis for developing *Worcestershire Minerals Local Plan Third Stage Consultation*.

Safeguarding mineral infrastructure

The *Second Stage Consultation on the Minerals Local Plan* proposed the following approaches to safeguarding infrastructure assets:

- not to identify any rail or sea links to safeguard;
- to safeguard wharfages at hub/processing sites but not to safeguard wharfages at "satellite site" which have been fully worked;
- to identify batching plants as assets to be safeguarded;
- to safeguard any plant for manufacturing coated materials or other concrete products permitted during the life of the plan;
- not to safeguard facilities for handing, processing and distribution of recycled aggregate materials as these are safeguarded by policy WCS 16 in the Waste Core Strategy;
- to safeguard any facilities for handling, processing and distribution of substitute or secondary aggregate materials permitted during the life of the plan.

The *Second Stage Consultation* proposed to develop a policy that would safeguard these infrastructure assets but set out where development on or adjacent to those assets might be considered appropriate.

Responses raised concerns that policies should safeguard potential or future rail depot sites, and that wharfage and batching plants are only temporary structures and should be removed once the development has been completed at that site, although the *Initial Sustainability Appraisal*[11] stated that the approach not to safeguard wharfages at "satellite sites" should be carefully considered to ensure that the wharfage could not provide a more sustainable transport solution for other current or potential future minerals sites. No comments were made on the circumstances in which development on or adjacent to infrastructure assets might be considered appropriate.

This *Third Stage Consultation* therefore identifies mineral sites and supporting infrastructure assets to be safeguarded as Mineral Infrastructure Safeguarding Areas and defines Mineral Infrastructure Consultation Areas around these. It recognises that the number and status of sites will alter over time as planning permissions are granted, reserves are exhausted and sites restored, or planning permissions lapse, and identifies a mechanism to review this through the Annual Monitoring Report[12].

Exempt development

The *Second Stage Consultation on the Minerals Local Plan* presented examples of types of non-mineral development which could be exempt from the requirements of safeguarding policies. The concept of exemptions was supported by stakeholders. The *Initial Sustainability Appraisal*[13] suggested that deriving the threshold for 'major development' from the definition in the Town and Country Planning (Development Management Procedure) (England) Order 2010 could be a reasonable approach. This has been considered alongside the proposals in the *Second Stage Consultation on the Minerals Local Plan* and has been used to refine the approach in the *Third Stage Consultation*.

The safeguarding process

The *Second Stage Consultation on the Minerals Local Plan* included little detail regarding the safeguarding process, the information that would be required from the developer or how the decision maker would use that information. The *Third Stage Consultation* includes draft policies and draft reasoned justification to address these issues. The *Initial Sustainability Appraisal*[14] highlighted some confusion between the terms Mineral Safeguarding Areas and Mineral Consultation Areas in The *Second Stage Consultation*. The *Third Stage Consultation* has been drafted with this in mind and seeks to provide much greater clarity.

10 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

11 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

12 Annual Monitoring Reports can be found at **www.worcestershire.gov.uk/AMR.**

13 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

14 Worcestershire County Council (2013) *Worcestershire Minerals Local Plan Second Consultation Draft Initial Sustainability Appraisal* **http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/17/emerging_minerals_local_plan_background_documents/6**

Third Stage Consultation on the Minerals Local Plan: Consultation Questions

Q 8.1 - Exempt Development:

Paragraph 8.4 lists types of development as being exempt from safeguarding requirements of Policy MLP 27 and Policy MLP 28.

a) Do you support the principle of certain types of development being exempt from the requirements of Policy MLP 27 and Policy MLP 28?

b) Do you agree that the types of development listed as being exempt from the requirements of Policy MLP 27 and Policy MLP 28 are appropriate?

c) Are there any other types of development which you think should be included in the list of exempt development?

Q 8.2 - Safeguarding process:

National policy requires nationally and locally important mineral resources to be safeguarded through the identification of Mineral Safeguarding Areas and Mineral Consultation Areas. Policy MLP 27 and Policy MLP 28 set out the requirements developers will need to address in relation to these.

Policy MLP 27: Safeguarding locally and nationally important mineral resources:

a) Is the 250m distance around the **Mineral Resource Safeguarding Areas** an appropriate and justified means of identifying the **Mineral Resource Consultation Areas**?

d) Is the balance between safeguarding finite mineral resources and placing reasonable expectations on non-minerals development appropriate and justified?

c) Does **Policy MLP 27** and the reasoned justification provide sufficient clarity as to how the safeguarding process would be applied?

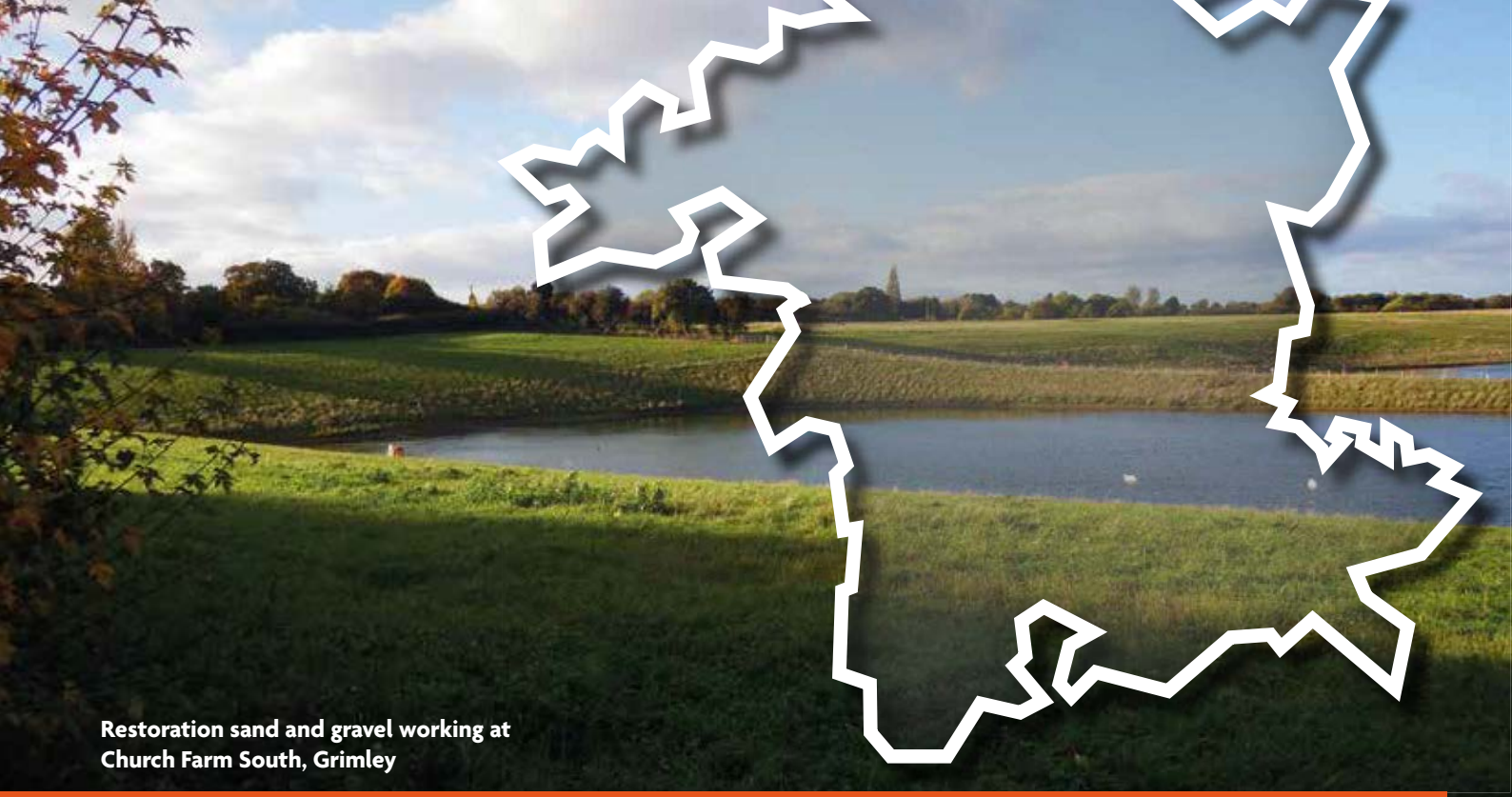
Policy MLP 28: Safeguarding permitted mineral sites and supporting infrastructure:

d) Is the 250m distance around the **Mineral Infrastructure Safeguarding Areas** an appropriate and justified means of identifying the **Mineral Infrastructure Consultation Areas**?

e) Is the balance between safeguarding mineral sites and supporting infrastructure and placing reasonable expectations on non-minerals development appropriate and justified?

f) Does **Policy MLP 28** and the reasoned justification provide sufficient clarity as to how the safeguarding process would be applied?

Q 8.3 - Are there any wording changes you would suggest to Chapter 8 to improve clarity or any other issues which you think should be considered?



Restoration sand and gravel working at Church Farm South, Grimley

9. Implementation and monitoring framework

Responsibilities for implementation

9.1 The key mechanisms by which the **vision**, **objectives** and policy requirements of the Minerals Local Plan will be implemented are through the submission and determination of planning applications and the provision of pre-application advice, primarily for mineral development but also including other forms of development that may sterilise mineral resources.

9.2 Worcestershire County Council is the Mineral Planning Authority responsible for determining planning applications for mineral development in Worcestershire,[1] and for monitoring the operation of mineral sites. The city, borough and district councils in the county will also have an important role to play in safeguarding mineral resources and supporting infrastructure through the application of **Policies MLP 27** and **MLP 28**.

9.3 The steady and adequate supply of minerals is reliant on the submission of planning applications and implementation of permissions by private sector mineral operators. These range in size from large companies operating across national boundaries to smaller scale operators of single sites.

9.4 Worcestershire County Council will need to continue to cooperate with neighbouring mineral planning authorities on the cross-boundary implications of mineral development, through engagement with the Aggregates Working Party and other mechanisms.

9.5 Other key players in the implementation of Worcestershire's Minerals Local Plan include:

- statutory agencies such as the Environment Agency, Natural England and Historic England in providing advice to both applicants and the Mineral Planning Authority;
- communities, businesses and the voluntary and charity sector, particularly where they take an active part in liaison committees or have a role to play in the long-term aftercare of restored sites; and
- bodies responsible for developing Neighbourhood Plans in ensuring any site allocations consider mineral safeguarding requirements.

1 Worcestershire County Council is also the responsible planning authority for waste management development and the County Council's own developments.

Delivering the objectives: risk assessment

9.6 In order to be effective, the Mineral Local Plan must be deliverable. The preparation of the Minerals Local Plan has been informed by a robust evidence base, consideration of alternative options, extensive informal and formal consultation with a wide range of interested parties, *Sustainability Appraisal*, *Habitats Regulations Assessment*, *Equalities Impact Assessment* and is considered to set the most appropriate strategy for mineral development in Worcestershire. However there are inevitable uncertainties associated with mineral demand and supply and the wider economic, social and environmental conditions of the county that may introduce risks to the delivery of the **vision** and **objectives** of the plan as intended.

9.7 Whilst the Minerals Local Plan is capable of accomodating variations, the risks to the delivery of each of the plan's **objectives** is considered below. This takes account of the the policy framework which is intended to facilitate their delivery. Where the objective is contributed to by many of the policies, only those that make the most significant contributions are considered in this section.

Objective 1: Deliver development in accordance with the priorities of the spatial strategy

9.8 The **strategic corridors** include 70%[2] of the county's key and significant sand and gravel resources (including 72%[3] of the Wildmoor Formation which contains silica sand deposits), 20%[4] of the county's Mercia Mudstone Group deposit, 9% of the county's known former building stone quarries[5] and significant areas of Sherwood Sandstone and Lias Group deposits which may possess some clay properties. Given the extent of the sand and gravel resources and the current stocks of permitted reserves for brick clay it is therefore considered highly likely that steady and adequate supply of sand and gravel and brick clay could be delivered from within the **strategic corridors** in accordance with the **spatial strategy**.

9.9 **Specific sites** and **preferred areas** have been allocated in the **spatial strategy**. Together these could provide 6.15 million tonnes of sand and gravel toward the identified need for at least 16.254-16.304 tonnes of sand and gravel over the life of the plan to meet annual production requirements and to reach and subsequently maintain a 7 year landbank of permitted reserves. As the identified need cannot be delivered solely from **specific sites** and **preferred areas**, the plan is dependent on windfall sites coming forward. Based on current production guidelines, at least 10.104-10.154 million tonnes of sand and gravel will need to be permitted at windfall sites within the **strategic corridors** over the life of the plan. It is considered that the scale of the key and significant sand and gravel resources contained within the **strategic corridors** means that this is likely to be deliverable.

9.10 The corridor priorities identified in **Policies MLP 2** to **MLP 6** are intended to guide working and restoration proposals whilst leaving enough flexibility to respond to site considerations when read alongside the policies in **Chapter 7**. The priorities have been carefully balanced so that they do not place undue burden on the developer or fetter development but maximise the economic, social and environmental gains from mineral working and restoration which is already required for all mineral development.

9.11 Development for the working of other minerals outside the **strategic corridors** is allowed by **Policy MLP 1** but is expected to be rare and as such should not undermine the delivery of integrated landscape-scale green infrastructure as set out in **Policies MLP 2** to **MLP 6**. Proposals outside of the corridors will not be covered by **Policies MLP 2** to **MLP 6** but will need to address green infrastructure considerations on a site-by-site basis though the policy requirements in **Chapter 7**.

2 By area.
3 By area.
4 By area.
5 14 out of 161 quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone* up to March 2016. See http://www.buildingstones.org.uk.

Objective 2: Maximise the contribution of substitute, secondary and recycled materials and minerals waste to overall mineral supply

9.12 There is little data about the production or use of substitute, secondary and recycled materials and minerals waste or the contribution they make to overall supply.

9.13 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. There are currently no industrial processes in Worcestershire that are known to produce secondary aggregates. However, there is potential for some provision of secondary aggregates in the future.

9.14 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 and railway track ballast. The supply of recycled materials will depend on the county's capacity to process these materials. Static facilities in Worcestershire received approximately 141,000 tonnes of inert waste for treatment in 2014, with a further 106,000 tonnes received for transfer.[6] It is not currently possible to assess the proportion of this which was used as aggregate. The *Waste Core Strategy*[7] sets targets for capacity at static plant, but due to data limitations it is not possible to monitor the role of mobile plant.

9.15 Secondary and recycled materials account for 29% of the total market nationally[8] and there is no evidence to indicate whether Worcestershire is likely to produce any more or any less than the national average. The *2016 Worcestershire Local Aggregates Assessment* is based on the assumption that that the contribution of substitute, secondary and recycled materials is already accounted for prior to considering the sales figures for primary aggregates. This approach has been supported by the West Midlands Aggregate Working Party.

9.16 **Policy MLP 7** seeks to enable development that will contribute to the overall sustainable supply of minerals from substitute, secondary or recycled materials or mineral waste. However, the current lack of information on the level of use of secondary and recycled materials locally means it may be difficult to monitor the success of the Minerals Local Plan in achieving this objective.

Objective 3: Maintain the steady and adequate supply of sand and gravel and address shortfalls in the landbank of permitted reserves

9.17 Aggregates are crucial to most forms of built development. They are strategically important and there are significant geographical imbalances across the country between the locations where suitable natural aggregate resources exist and where they are most needed. This is recognised in national policy by the "Managed Aggregate Supply System", which requires Mineral Planning Authorities to make provision for the maintenance of landbanks for aggregate minerals of at least 7 years for sand and gravel, to participate in the operation of an Aggregate Working Party, and to prepare an annual Local Aggregates Assessment.

9.18 Worcestershire's *2016 Local Aggregates Assessment*[9] underpins the Minerals Local Plan, setting the baseline data for sand and gravel using data up to 31st December 2015. The *2016 Local Aggregates Assessment* was developed in discussion with, and has been endorsed by, the West Midlands Aggregates Working Party.

9.19 The Local Aggregates Assessment is produced annually. The figures in the *2016 Local Aggregates Assessment* give a baseline but should not be considered as static targets. **Policy MLP 8** seeks to address this by enabling minerals development which contributes to delivering and subsequently maintaining a landbank for sand and gravel of at least 7 years whilst being flexible enough to accommodate changes to the balance of demand and supply identified in the Local Aggregates Assessment annually.

9.20 **Policy MLP 8** also seeks to ensure that sufficient productive capacity is maintained to ensure a steady and adequate supply of minerals. The Minerals Local Plan recognises that

6 Environment Agency Waste Data Interrogator 2014, interrogated for treatment and transfer facilities for inert waste in Worcestershire.
7 The Waste Core Strategy for Worcestershire was adopted in November 2012. The relevant documents are available to view on www.worcestershire.gov.uk/wcs.
8 Mineral Products Association (2015) *The Mineral Products Industry at a Glance*, page 7, http://www.mineralproducts.org/documents/Mineral_Products_Industry_at_a_Glance_2015.pdf. 60 million tonnes of secondary & recycled material out of a total aggregates supply market of 209 million tonnes (28.7%).
9 It is available at www.worcestershire.gov.uk/amr.

Worcestershire's productive capacity for sand and gravel will be provided through development at a combination of **specific sites**, **preferred areas** and **windfall sites**, as well as through existing sites.

9.21 70%[10] of the county's key and significant sand and gravel resources are located within the identified **strategic corridors**, and resources and supporting infrastructure are safeguarded through **Policies MLP 27** and **MLP 28**. It is considered that the policy framework is sufficiently robust but also flexible enough to enable delivery of this objective.

Objective 4: Maintain the county's role in the steady and adequate supply of brick clay, bricks and brick products

9.22 Worcestershire plays a nationally important role in the provision of brick clay and brick products. The Minerals Local Plan makes provision for brick clay through **Policy MLP 10** which seeks to maintain or enhance the county's role in the supply of these materials. Stocks of permitted reserves are considered adequate to achieve this well beyond the life of the plan. However, the risk of a loss of productive capacity in the county is increased due to the close proximity of the existing brick clay sites and associated brick works meaning that they could be vulnerable to similar natural events limiting their ability to maintain supply, and their ownership by the same company making the county's productive capacity vulnerable to commercial decisions of one operator.

9.23 The **strategic corridors** encompass 20% of the Mercia Mudstone Group clay resources in the county. This is expected to be sufficient to enable the development of further clay workings in approriate locations. Additional clay reserves from other formations are also included within the **strategic corridors**. Clay resources and supporting infrastructure are safeguarded through **Policies MLP 27 and MLP 28**. It is considered that the policy framework is sufficiently robust but also flexible enough to enable delivery of this objective.

Objective 5: Foster an adequate and diverse supply of building stone

9.24 Worcestershire does not play a significant role in the supply of building stone. There are no active building stone sites in Worcestershire and building stone has only been worked in the county as ancillary to materials for aggregate use. However **Policy MLP 12: Adequate and Diverse Supply of Building Stone** and **Policy MLP 1: Strategic Location of Development** would enable development proposals for building stone to come forward both within the **strategic corridors** or outside them where they are justified against the policy criteria.

9.25 Given the significant variations in the appearance and characteristics of building stone, even within the same broad stone type, and the intermittent nature of demand for specific building stones it is difficult to take a more robust approach than this. However the sources identified in the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building With Stone* have been used as the basis for safeguarding building stone resources through **Policy MLP 27**. It is considered that the policy framework is sufficiently robust but also flexible enough to enable delivery of this objective.

Objective 6: Enable the sustainable supply of other locally and nationally important mineral resources found in the county, including crushed rock and silica sand

9.26 Aggregates are crucial to most forms of built development. They are strategically important and there are significant geographical imbalances across the country between the locations where suitable natural aggregate resources exist and where they are most needed. This is recognised in national policy by the "Managed Aggregate Supply System", which requires Mineral Planning Authorities to make provision for the maintenance of landbanks for aggregate minerals of at least 10 years for crushed rock, to participate in the operation of an Aggregate Working Party, and to prepare an annual Local Aggregates Assessment.[11]

9.27 Worcestershire's *2016 Local Aggregates Assessment*[12] underpins the Minerals Local Plan, setting the baseline data for crushed rock using data up to 31st December 2015. The *2016 Local Aggregates Assessment* was developed in

10 By area.
11 The *2016 Local Aggregates Assessment* sets out the baseline data for aggregate minerals underpinning the Minerals Local Plan, using data up to 31st December 2015. It is available at www.worcestershire.gov.uk/amr.
12 It is available at www.worcestershire.gov.uk/amr.

discussion with, and has been endorsed by, the West Midlands Aggregates Working Party. There are significant constraints on delivering crushed rock production in Worcestershire (these are outlined in **Chapter 2**). The Mineral Planning Authority undertook extensive discussion with the West Midlands and surrounding Aggregate Working Parties on this matter, reaching agreement that the Worcestershire Minerals Local Plan should not pursue a production guideline or set landbank requirement which it is unlikely to be able to meet for the foreseeable future.[13] As such, **Policy MLP 9** enables crushed rock development to come forward but does not set supply targets or delivery milestones.

9.28 Two potential corridors containing crushed rock resources were identified in the development of the Minerals Local Plan, but have not been included in the **spatial strategy** as **strategic corridors** as the constraints outlined above indicate that they would be unlikely to be deliverable. However, **Policy MLP 1: Strategic location of development** would enable development proposals for crushed rock to come forward outside the **strategic corridors** where they are justified against the policy criteria, and crushed rock resources and supporting infrastructure are safeguarded through **Policies MLP 27** and **MLP 28**.

9.29 Worcestershire does not play a significant role in the supply of silica sand for industrial uses. The stocks of permitted reserves of silica sand at Worcestershire's existing sites are likely to be sufficient for the life of the plan.[14] As such, **Policy MLP 11** seeks to enable silica sand development which would increase or maintain Worcestershire's stock of permitted reserves of silica sand for industrial uses. It also seeks to ensure sufficient productive capacity is maintained as this is crucial to ensuring a steady and adequate supply of minerals. The Minerals Local Plan recognises that Worcestershire's productive capacity for silica sand for industrial uses will be provided through a combination of windfall sites, stockpiling of silica sand where it is worked alongside aggregate sand and gravel, and existing sites.

9.30 The **strategic corridors** include 72% of the Wildmoor Formation which contains the silica sand resources in the county, and silica sand resources and supporting infrastructure are safeguarded through **Policies MLP 27** and **MLP 28**.

9.31 Other mineral deposits exist within Worcestershire, but they are not considered to be of local or national importance. However, **Policy MLP 1** and **Policy MLP 13** would enable development proposals for other locally and nationally important mineral resources to come forward both within the **strategic corridors** or outside them where they are justified against the policy criteria.

9.32 It is considered that the policy framework is sufficiently robust but also flexible enough to enable delivery of this objective.

Objective 7: Safeguard locally and nationally important minerals and supporting infrastructure from being needlessly sterilised

9.33 The approach to safeguarding important minerals and essential infrastructure is considered to be proportionate and balanced. The delivery of this objective will rely on the implementation of mineral safeguarding processes by the Local Planning Authorities when assessing applications for development in the Mineral Consultation Areas (**Policies MLP 27** and **MLP 28**).

13 This has been subject to Duty to Cooperate discussions with the Aggregate Working Parties of the West Midlands, South West, South Wales and East Midlands. See Worcestershire County Council (2016) *Minerals Local Plan Background Document - Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*, available at www.worcestershire.gov.uk/mineralsbackground.

14 The available data cannot be published due to long-standing confidentially arrangements agreed between the mineral industry and government to protect operators' commercial interests. This means that sales data will not be released or published where there are fewer than 3 operational sites in an area unless express permission is given by the operators affected. See Worcestershire County Council (2015) *Minerals Local Plan Background Document: Silica Sand in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.

Objective 8: Promote community inclusion in mineral development from inception to after-use so that local issues are understood and addressed

9.34 The Mineral Planning Authority views early community engagement as an important element of sustainable development and strongly encourages developers to engage in pre-application consultation with statutory consultees, local communities and interest groups and sets out an expectation that this will be undertaken in accordance with the *Statement of Community Involvement*.[15] In addition the Mineral Planning Authority strongly encourages ongoing community engagement through liaison committees during the lifetime of a minerals site. However national policy is clear that this cannot be a policy requirement.

9.35 Consultation on the development of the Minerals Local Plan provided opportunities for communities and consultees to comment on the development of the Minerals Local Plan at various stages, including giving an opportunity to contribute to setting priorities for each strategic corridor and to comment on the wording of policies that will inform the design and operation of development.

If the preparation of Supplementary Planning Documents that "masterplan" the green infrastructure components of **specific sites** and **preferred areas** is supported through consultation and by industry and key partners this will give enhanced opportunities for community inclusion and identification of locally important issues.

Objective 9: Ensure that minerals development contributes to the mitigation of and adaptation to climate change and makes prudent use of natural resources

9.36 The winning and working of minerals can be resource intensive, however **Policy MLP 15** sets a requirement for mineral development to minimise demand for water resources and consider energy and water efficiency measures. The prudent use of mineral resources is addressed in the plan through the Development Management policies of **Chapter 7** which highlight that minerals should be extracted efficiently, but that the need for a sustainable restoration scheme will need to be considered in balance with the prudent use of mineral resources. **Chapter 8** also addresses the prudent use of mineral resources by safeguarding them for future generations.

9.37 The scale of mineral development means that sites have significant potential to contribute towards climate change adaptation at various stages of a site's life. The green infrastructure priorities for the **strategic corridors** and the requirements in the policies of **Chapter 7** for the delivery of integrated and multifunctional green infrastructure will have significant benefits for climate change adaptation and mitigation. For example, coherent and resilient habitat networks will help wildlife to cope with climate change and will improve the ability of our natural environment to provide a range of high quality ecosystem services,[16] and creating wetlands and restoring more natural flooding processes will provide benefits for water quality as well as for flood risk. However the impact of individual sites on wider networks will depend on individual proposals, the geology at those sites, the local context and long-term land management aspirations. Individual proposals will need to address the protection and enhancement policies set out in **Chapter 7** which together address many aspects of climate change mitigation and adaptation.

9.38 It is considered that the policy framework is sufficiently robust but also flexible enough to enable delivery of this objective.

Objective 10: Ensure that mineral development protects and enhances the health, well-being, safety and amenity of people and communities in and around Worcestershire

9.39 The policies in **Chapter 7** seek to control and mitigate the impacts of mineral workings on people and the environment and deliver net benefits where possible. These policies are more comprehensive than those in the *Herefordshire and Worcestershire Minerals Local Plan 1997* and are based on European and national legislation, policy and standards and best practice. They are considered proportionate and deliverable.

15 http://www.worcestershire.gov.uk/sci.
16 Defra (2010) *Making Space for Nature: A review of England's Wildlife Sites and Ecological Network.*

9.40 The **spatial strategy** seeks to further protect and enhance the health and well-being of communities by identifying specific enhancements to recreation provision in some areas. These enhancements could have a positive impact on health and well-being across the county.

9.41 The policies in **Chapter 8** seek to ensure that sensitive or incompatible land uses are not introduced in the vicinity of a mineral operation or supporting infrastructure.

9.42 It is considered that the policy framework is sufficiently robust but also flexible enough to enable delivery of this objective.

Objective 11: Ensure that mineral development protects and enhances the natural and historic environment and distinctive local character

9.43 The policies in **Chapter 7** seek to control and mitigate the impacts of mineral workings on people and the environment and deliver net benefits where possible. These policies are more comprehensive than those in the *Herefordshire and Worcestershire Minerals Local Plan 1997* and are based on European and national legislation, policy and standards and best practice. They are considered proportionate and deliverable.

9.44 The **spatial strategy** seeks to further protect and enhance the natural and historic environment and distinctive local character by driving the delivery of priorities in each of the **strategic corridors**. These have been developed based on baseline environmental conditions in each area and the potential for mineral workings and restoration to contribute towards their enhancement.

9.45 It is considered that the policy framework is sufficiently robust but also flexible enough to enable delivery of this objective.

Objective 12: Ensure that mineral development protects and enhances the vitality of the local economy

9.46 A steady and adequate supply of minerals is essential to support the vitality of the economy, with mineral resources being required for housing, infrastructure and industrial processes. The policies in **Chapter 6** seek to deliver steady and adequate supply of minerals over the life of the plan and the policies in **Chapter 8** protect the long-term supply by safeguarding resources from being needlessly sterilised.

9.47 However mineral working can impact on other sectors of the economy, having the potential to impact positively or negatively on agriculture or tourism and to impact on other businesses through amenity impacts and impacts on the strategic transport network. The policies in **Chapter 7** seek to control and mitigate the impacts of mineral workings on people and the environment and deliver net benefits where possible. These policies are more comprehensive than those in the *Herefordshire and Worcestershire Minerals Local Plan 1997* and are based on European and national legislation, policy and standards and best practice. They are considered proportionate and deliverable.

9.48 The **spatial strategy** seeks to further protect and enhance the vitality of the local economy by taking account of opportunities to conserve, restore or enhance agricultural land uses and enhance tourism assets, including long-distance footpaths, as appropriate to each **strategic corridor**.

9.49 It is considered that the policy framework is sufficiently robust but also flexible enough to enable delivery of this objective.

Objective 13: Optimise opportunities to integrate economic, social and environmental benefits through the delivery of highquality multifunctional green infrastructure throughout the life of the mineral development

9.50 The delivery of this objective is integrated throughout the plan. It has informed the development of the **spatial strategy** and has been integrated into the policies in **Chapter 7**.

9.51 Whilst the requirements of these policies are in line with national policy and are not considered to place undue burden on mineral developers, the consideration of these individual elements in an integrated way represents a step-change in mineral planning policy in Worcestershire. This presents a risk to delivery, however this risk can be mitigated through the encouragement of pre-application discussion with developers at an early stage.

Monitoring framework

9.52 The Mineral Planning Authority is committed to monitoring the Minerals Local Plan. To enable an assessment of whether the Minerals Local Plan is being implemented effectively and to ensure that the Plan's objectives are being met, monitoring will be undertaken through the Council's Mineral and Waste Local Development Framework Annual Monitoring Report (AMR). The Local Aggregates Assessment will also be updated annually. This will enable the Mineral Planning Authority to establish:

- whether the Minerals Local Plan's policies are being implemented and its objectives met;
- whether the objectives and policies are still an appropriate response to the evidence base;
- how the Minerals Local Plan is performing against its targets;
- whether any individual policies or parts of the Plan require review in advance of review of the Minerals Local Plan as a whole;
- whether implementation of policies is having any unintended or unforeseen consequences; and
- whether the Minerals Local Plan's policies are being reflected in decisions on planning applications and appeals.

9.53 This section sets out arrangements for monitoring the effectiveness of the Minerals Local Plan in a Monitoring Schedule. It is is structured by reference to the Plan's **objectives** as identified in **Chapter 3**. For each objective, the policies that are central to its delivery are identified, together with the key delivery agencies and mechanisms. A range of indicators is provided for each objective, together with baseline data, targets and monitoring triggers for review, and these will be reported annually in the AMR in respect of the planning applications determined in the year being monitored.

9.54 While the Minerals Local Plan looks forward to 2035, there is an expectation that it will be reviewed in full on a five-yearly basis if required, to take account of the changing national policy context, trends in mineral supply and demand and reserves.

9.55 If monitoring indicates that targets have been missed, the process outlined in **Figure 9.1** will be followed. The process sets out to establish if a failure to meet a target is significant, in which case we need to review and correct the Minerals Local Plan, or whether it is the result of short-term or other factors which are not significant. It may be possible to correct some failures through mechanisms such as adopting a Supplementary Planning Document (SPD) rather than formally reviewing the entire Minerals Local Plan.

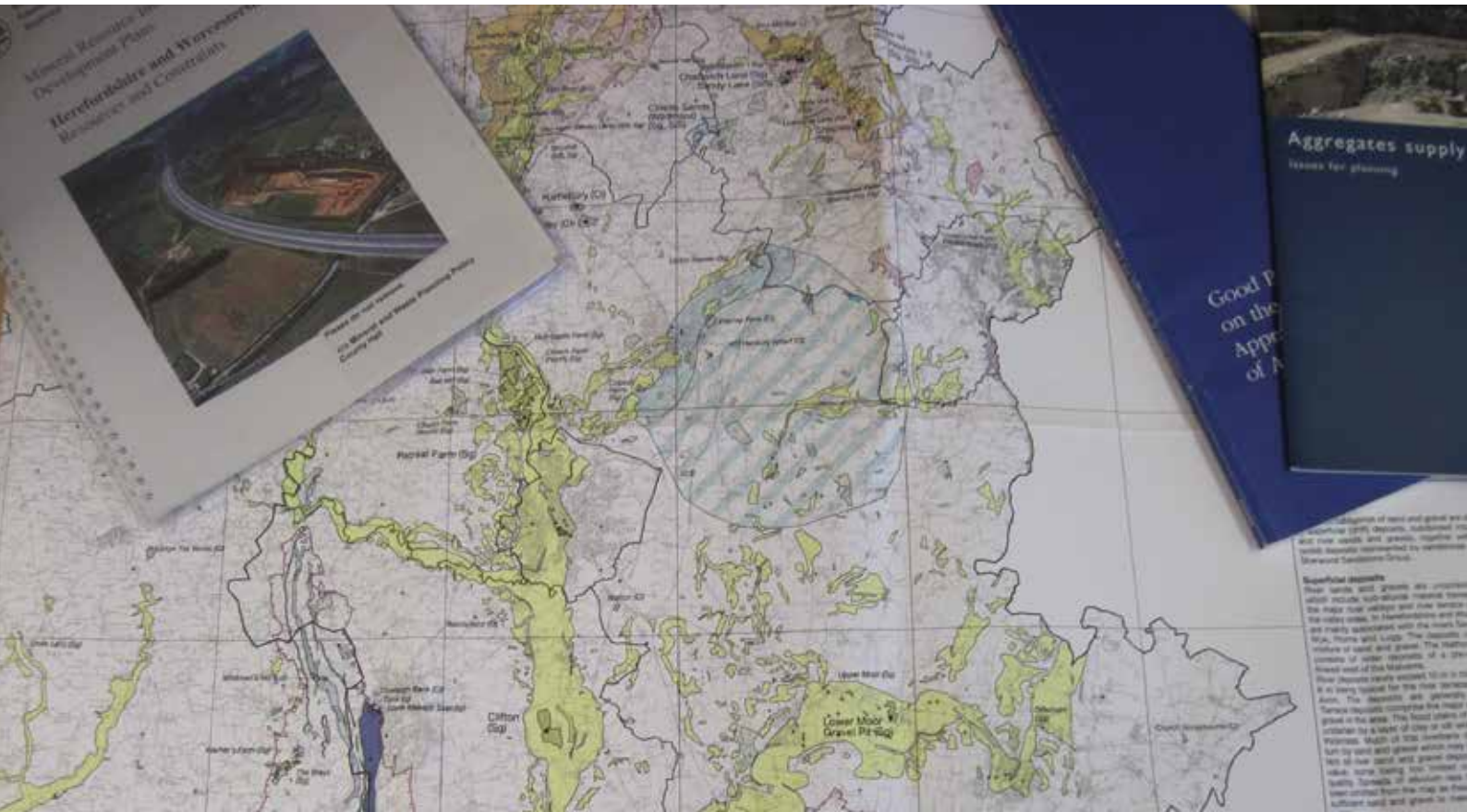
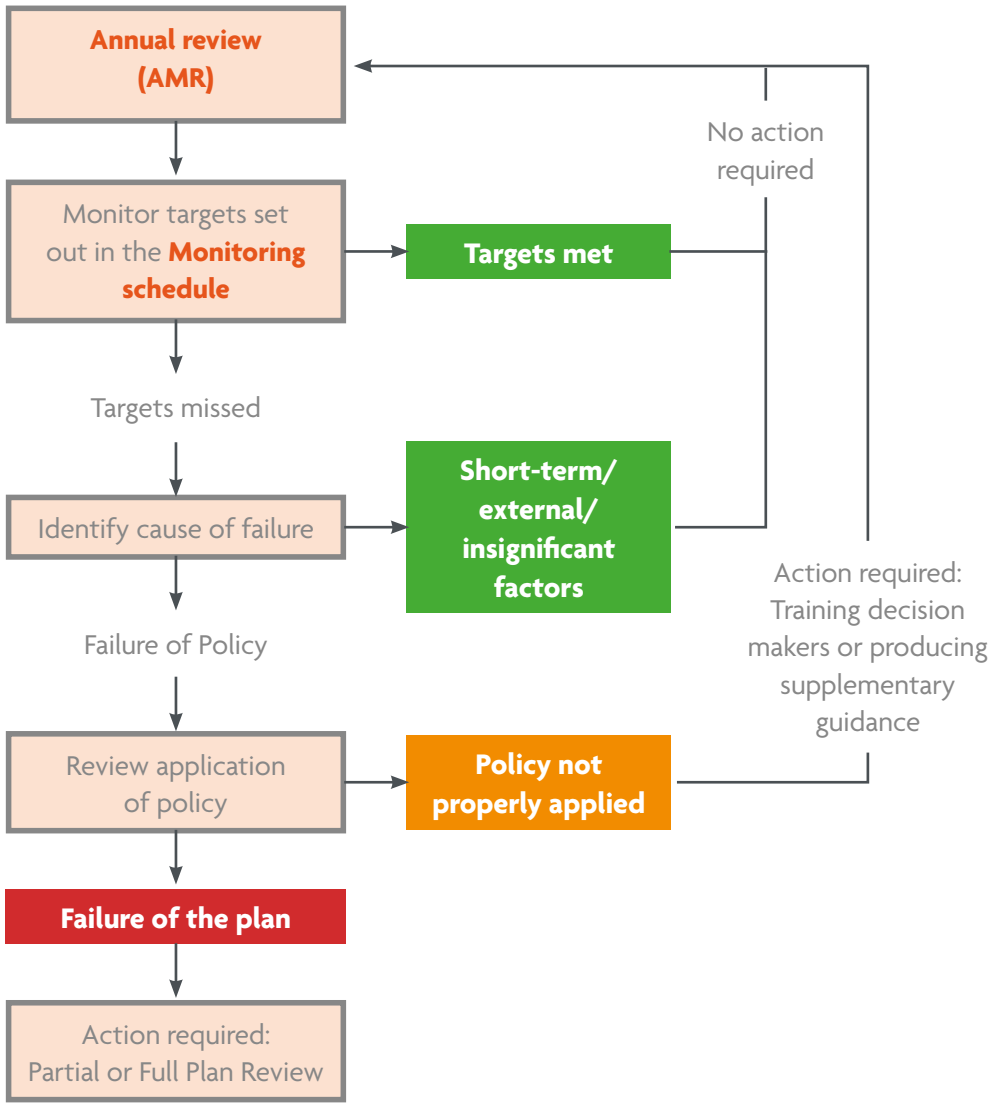


Figure 9.1 Policy review process



Monitoring schedule

9.56 The monitoring schedule considers how each of the objectives will be implemented and how their achievement will be monitored.


Clifton Quarry, near Worcester

Objective 1: Deliver development in accordance with the priorities of the spatial strategy

How will this be achieved?

Policy framework	MLP 1: Strategic Location of Development; MLP 2: Avon and Carrant Brook Strategic Corridor; MLP 3: Lower Severn Strategic Corridor; MLP 4: North East Worcestershire Strategic Corridor; MLP 5: North West Worcestershire Strategic Corridor; MLP 6: Salwarpe Tributaries Strategic Corridor; MLP 8: Steady and Adequate Supply of Sand and Gravel; MLP 10: Steady and Adequate Supply of Brick Clay and Clay Products; MLP 11: Steady and Adequate Supply of Silica Sand;	MLP 12: Adequate and Diverse Supply of Building Stone; MLP 13: Supply of Other Locally and Nationally Important Industrial Minerals; MLP 15: Sustainable Design Principles; MLP 17: Access and Recreation; MLP 18: Biodiversity; MLP 19: Landscape; MLP 20: Agriculture and Soils; MLP 21: Geodiversity; MLP 22: Water Environment; MLP 23: Historic Environment; MLP 26: Sustainable Development Delivery.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • District, city and borough councils as Local Planning Authorities where non-mineral planning permission would be required; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

Indicators and targets	**Indicator**	**Baseline**	**Measure**
	1. Location of minerals development	All current mineral workings are within the strategic corridors	All permissions for sand and gravel, brick clay and silica sand development within the strategic corridors.
	2. Integration of corridor priorities into development proposals	N/A	All permissions to make appropriate contribution to the priorities of the relevant strategic corridor. Proposals will be considered not to have made an appropriate contribution where this is identified by statutory consultees or other appropriate bodies or in the committee or delegated report prepared.

Objective 2: Maximise the contribution of substitute, secondary and recycled materials and minerals waste to overall mineral supply

How will this be achieved?

Policy framework	MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply; MLP 24: Transport To and From Site; MLP 25: Transport Within Mineral Sites; MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • District, city and borough councils as Local Planning Authorities where non-mineral planning permission would be required; • Statutory consultees or other appropriate bodies for technical advice.
Delivery mechanism	• Pre-application advice; • Mineral planning applications; • Waste planning applications; • Other planning applications.

How will we know it is being achieved?

Indicators and targets

Indicator	Baseline	Measure
3. Substitute, secondary and recycled materials and minerals waste: Productive capacity	N/A	Maintain or enhance Worcestershire's productive capacity for substitute, secondary and recycled materials and minerals waste. Proposals will be considered to have contributed to Worcestershire's productive capacity where it will provide an additional site or more efficient plant, machinery or working practices at existing sites as identified in the committee or delegated report prepared.
4. Local Plans and Neighbourhood Plans with policies to encourage the use of substitute, secondary and recycled materials in development	Two Local Plans. Neighbourhood Plans not currently monitored	All Local Plans and Neighbourhood Plans that are adopted during the monitoring year contain policies to encourage the use of substitute, secondary and recycled materials in development.

Objective 3: Maintain the steady and adequate supply of sand and gravel and address shortfalls in the landbank of permitted reserves

How will this be achieved?

Policy framework	MLP 1: Strategic Location of Development; MLP 2: Avon and Carrant Brook Strategic Corridor; MLP 3: Lower Severn Strategic Corridor; MLP 4: North East Worcestershire Strategic Corridor; MLP 5: North West Worcestershire Strategic Corridor; MLP 6: Salwarpe Tributaries Strategic Corridor; MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply;	MLP 8: Steady and Adequate Supply of Sand and Gravel; MLP 15: Sustainable Design Principles; MLP 24: Transport To and From Site; MLP 25: Transport Within Mineral Sites; MLP 27: Safeguarding Locally and Nationally Important Mineral Resources; MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • West Midlands Aggregate Working Party in advising on Managed Aggregate Supply System and annual Local Aggregates Assessment; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

Indicators and targets

Indicator	Baseline	Measure
5. Sand and gravel: Balance of supply and demand	Production guideline of 0.637 million tonnes	Average sales over last 3 years within 15% of baseline production guideline (*2016 Local Aggregates Assessment*).
6. Sand and gravel: Landbank of permitted reserves	1.41-1.48 years at 31st December 2015	Phase 1 (2016-2025): increase landbank to 7 years as quickly as possible and subsequently maintain a landbank of at least 7 years. Phase 2: maintain a landbank of at least 7 years.
7. Sand and gravel: Productive capacity	Six sites with permitted reserves or processing capacity	Maintain or enhance Worcestershire's productive capacity. Proposals will be considered to have contributed to Worcestershire's productive capacity where it will provide an additional site or more efficient plant, machinery or working practices at existing sites as identified in the committee or delegated report prepared.

Objective 4: Maintain the county's role in the steady and adequate supply of brick clay, bricks and brick products

How will this be achieved?

Policy framework	MLP 1: Strategic Location of Development; MLP 2: Avon and Carrant Brook Strategic Corridor; MLP 3: Lower Severn Strategic Corridor; MLP 4: North East Worcestershire Strategic Corridor; MLP 6: Salwarpe Tributaries Strategic Corridor; MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply;	MLP 10: Steady and Adequate Supply of Brick Clay and Clay Products; MLP 15: Sustainable Design Principles; MLP 24: Transport To and From Site; MLP 25: Transport within Mineral Sites; MLP 27: Safeguarding Locally and Nationally Important Mineral Resources; MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

	Indicator	Baseline	Measure
Indicators and targets	**8. Brick clay: Stock of permitted reserves**	75 years	Worcestershire's stock of permitted reserves of brick clay to be maintained at at least 25 years. Monitoring this indicator will be dependent on confidentiality agreements and goodwill between operators and the Mineral Planning Authority.
	9. Brick clay: Productive capacity	2 quarries with 2 associated brickworks	Maintain or enhance Worcestershire's productive capacity for brick clay, bricks and brick products. Proposals will be considered to have contributed to Worcestershire's productive capacity where it will provide an additional site or more efficient plant, machinery or working practices at existing sites as identified in the committee or delegated report prepared.

Objective 5: Foster an adequate and diverse supply of building stone

How will this be achieved?

Policy framework	MLP 1: Strategic Location of Development; MLP 4: North East Worcestershire Strategic Corridor; MLP 6: Salwarpe Tributaries Strategic Corridor; MLP 5: North West Worcestershire Strategic Corridor; MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply;	MLP 12: Adequate and Diverse Supply of Building Stone; MLP 15: Sustainable Design Principles; MLP 24: Transport To and From site; MLP 25: Transport within Mineral Sites; MLP 27: Safeguarding Locally and Nationally Important Mineral Resources; MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

Indicators and targets	**Indicator**	**Baseline**	**Measure**
	10. Building stone: Stocks of permitted reserves	0	Maintain or increase stocks of permitted reserves. Monitoring this indicator will be dependent on confidentiality agreements and goodwill between operators and the Mineral Planning Authority.
	11. Building stone: Productive capacity	0	Maintain or enhance Worcestershire's productive capacity for different types of building stone. Proposals will be considered to have contributed to Worcestershire's productive capacity where it will provide an additional site or more efficient plant, machinery or working practices at existing sites as identified in the committee or delegated report prepared.

Objective 6: Enable the sustainable supply of other locally and nationally important mineral resources found in the county, including crushed rock and silica sand

How will this be achieved?

Policy framework	MLP 1: Strategic Location of Development; MLP 4: North East Worcestershire Strategic Corridor; MLP 5: North West Worcestershire Strategic Corridor; MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply; MLP 9: Steady and Adequate Supply of Crushed Rock; MLP 11: Steady and Adequate Supply of Silica Sand;	MLP 13: Supply of Other Locally and Nationally Important Industrial Minerals; MLP 14: Supply of Energy Minerals; MLP 15: Sustainable Design Principles; MLP 24: Transport To and From Site; MLP 25: Transport within Mineral Sites; MLP 27: Safeguarding Locally and Nationally Important Mineral Resources; MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

	Indicator	Baseline	Measure
Indicators and targets	**12. Crushed rock: Balance of supply and demand**	Production guideline of 0 tonnes	Changes in relevant local information that results in a change in the annual production guideline from the baseline (*2016 Local Aggregates Assessment*).
	13. Crushed rock: Landbank of permitted crushed rock reserves	0 years	Maintain or increase landbank of permitted reserves. Monitoring this indicator will be dependent on confidentiality agreements and goodwill between operators and the Mineral Planning Authority.
	14. Crushed rock: Productive capacity	None	Maintain or enhance Worcestershire's productive capacity for crushed rock. Proposals will be considered to have contributed to Worcestershire's productive capacity where it will provide an additional site or more efficient plant, machinery or working practices at existing sites as identified in the committee or delegated report prepared.

How will we know it is being achieved? *(Objective 6 continued)*

Indicators and targets	Indicator	Baseline	Measure
	15. Silica sand: Stocks of permitted reserves	Unable to publish due to confidentiality agreements but likely to be sufficient for the life of the Minerals Local Plan	Worcestershire's stock of permitted reserves of silica sand for industrial uses to be maintained at at least 10 years. Monitoring this indicator will be dependent on confidentiality agreements and goodwill between operators and the Mineral Planning Authority.
	16. Silica sand: Productive capacity	Two sites	Maintain or enhance Worcestershire's productive capacity for silica sand for industrial uses. Proposals will be considered to have contributed to Worcestershire's productive capacity where it will provide an additional site or more efficient plant, machinery or working practices at existing sites as identified in the committee or delegated report prepared.
	17. Local or national significance of other minerals	No other mineral deposits considered to be locally or nationally significant	Need or uses mean that mineral deposits become locally or nationally important.

Objective 7: Safeguard locally and nationally important minerals and supporting infrastructure from being needlessly sterilised

How will this be achieved?

Policy framework	MLP 1: Strategic Location of Development; MLP 27: Safeguarding Locally and Nationally Important Mineral Resources; MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • District, city and borough councils as Local Planning Authorities responsible for determining applications for non-mineral development and applying safeguarding policies; • Statutory consultees or other appropriate bodies for technical advice.
Delivery mechanism	• Refusal of planning permission for non-mineral development where appropriate; • Safeguarding requirements applied through conditions on non-mineral development; • Pre-application advice; • Mineral planning applications.

How will we know it is being achieved?

	Indicator	Baseline	Measure
Indicators and targets	**18. Applications in Mineral Resource Consultation Areas**	N/A	All decisions in accordance with Mineral Planning Authority's advice.
	19. Applications in Mineral Infrastructure Consultation Areas	N/A	All decisions in accordance with Mineral Planning Authority's advice.

Objective 8: Promote community inclusion in mineral development from inception to after-use so that local issues are understood and addressed

How will this be achieved?

Policy framework	MLP 15: Sustainable Design Principles; MLP 16: Health and Quality of Life; MLP 21: Geodiversity.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • Statutory consultees or other appropriate bodies for technical advice.
Delivery mechanism	• Pre-application advice; • Mineral planning applications; • Quarry liaison committees.

How will we know it is being achieved?

	Indicator	Baseline	Measure
Indicators and targets	**20. Proposals discussed with Mineral Planning Authority and local community at pre application stage**	1 of 2 submitted applications in 2014/15	Maintain or increase pre-application discussions. This will include pre-application discussions for all mineral development, whether or not the proposal is later submitted for consideration as a planning application.
	21. The proportion of mineral sites with functioning liaison committees	3 out of 16 (18.75%)	Maintain or increase the proportion of mineral sites with functioning liaison committees This will include all sites categorised as "active", "inactive", "permitted (not commenced)", "undergoing restoration", and "restored – in aftercare".

Objective 9: Ensure that minerals development contributes to the mitigation of and adaptation to climate change and makes prudent use of natural resources

How will this be achieved?

Policy framework	MLP 2: Avon and Carrant Brook Strategic Corridor; MLP 3: Lower Severn Strategic Corridor; MLP 4: North East Worcestershire Strategic Corridor; MLP 5: North West Worcestershire Strategic Corridor; MLP 6: Salwarpe Tributaries Strategic Corridor; MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply; MLP 8: Steady and Adequate Supply of Sand and Gravel; MLP9: Steady and Adequate Supply of Crushed Rock; MLP 10: Steady and Adequate Supply of Brick Clay and Clay Products; MLP 11: Steady and Adequate Supply of Silica Sand;	MLP 12: Adequate and Diverse Supply of Building Stone; MLP 13: Supply of Other Locally and Nationally Important Industrial Minerals; MLP 14: Supply of Energy Minerals; MLP 15: Sustainable Design Principles; MLP 18: Biodiversity; MLP 20: Agriculture and Soils; MLP 22: Water Environment; MLP 24: Transport To and From Site; MLP 25: Transport within Mineral Sites; MLP 26: Sustainable Development Delivery; MLP 27: Safeguarding Locally and Nationally Important Mineral Resources; MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

	Indicator	Baseline	Measure
Indicators and targets	**22. Water and energy efficiency measures**	N/A	All permissions to make adequate provision for water and energy efficiency. Proposals will be considered not to have made adequate provision where this is identified by statutory consultees or other appropriate bodies or in the committee or delegated report prepared.

How will we know it is being achieved? *(Objective 9 continued)*

Indicators and targets	Indicator	Baseline	Measure
	23. Sustainable drainage systems	N/A	All permissions to make adequate provision for sustainable drainage systems. Proposals will be considered not to have made adequate provision where this is identified by statutory consultees or other appropriate bodies or in the committee or delegated report prepared.
	24. Impact on soil resources and the long term potential of best and most versatile agricultural land	N/A	No unacceptable adverse impact on soil resources or the long term potential of best and most versatile agricultural land. Proposals will be considered to have an unacceptable adverse impact where this is identified by statutory consultees or other appropriate bodies or in the committee or delegated report prepared.
	See also: Indicator 2. *Integration of corridor priorities into development proposals* Indicator 3. *Substitute, secondary and recycled materials and minerals waste: Productive capacity* Indicator 4. *Local Plans and Neighbourhood Plans with policies to encourage the use of substitute, secondary and recycled materials in development* Indicator 18. *Applications in Mineral Resource Consultation Areas*		

Objective 10: Ensure that mineral development protects and enhances the health, well-being, safety and amenity of people and communities in and around Worcestershire

How will this be achieved?

Policy framework	MLP 2: Avon and Carrant Brook Strategic Corridor; MLP 3: Lower Severn Strategic Corridor; MLP 4: North East Worcestershire Strategic Corridor; MLP 5: North West Worcestershire Strategic Corridor; MLP 6: Salwarpe Tributaries Strategic Corridor; MLP 15: Sustainable Design Principles; MLP 16: Health and Quality of Life; MLP 17: Access and Recreation;	MLP 22: Water Environment; MLP 24: Transport To and From Site; MLP 25: Transport within Mineral Sites; MLP 26: Sustainable Development Delivery ; MLP 27: Safeguarding Locally and Nationally Important Mineral Resources; MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

	Indicator	Baseline	Measure
Indicators and targets	**25. Impacts on health and quality of life**	N/A	No proposals granted which would give rise to unacceptable adverse impact on health or quality of life. Proposals will be considered to have an unacceptable adverse impact where this is identified by an Environmental Health Officer, statutory body or other appropriate bodies or in the committee or delegated report prepared.
	26. Impact on strategic transport network	N/A	No unacceptable impact on strategic transport network. Proposals will be considered to have an unacceptable adverse impact where this is identified by statutory consultees or other appropriate bodies or in the committee or delegated report prepared.

How will we know it is being achieved? *(Objective 10 continued)*

Indicators and targets	Indicator	Baseline	Measure
	27. Consideration of hazards and safety	N/A	No proposals granted which would give rise to unacceptable hazards. Proposals will be considered to have given adequate consideration to hazards and safety where this is identified by a statutory body or in the committee or delegated report prepared.
	28. Impacts on right of way or existing publicly accessible green space	N/A	No proposals granted which would give rise to unacceptable adverse impact on a right of way or existing publicly accessible green space. Proposals will be considered to have an unacceptable adverse impact where this is identified by a Public Rights of Way Officer, statutory body or other appropriate bodies or in the committee or delegated report prepared.
	29. Enhancement to informal access and recreation provision	N/A	Permissions with adequate provision for informal access and recreation. Proposals will be considered not to have made adequate provision where this is identified by a Public Rights of Way Officer, statutory consultees or other appropriate bodies or in the committee or delegated report prepared.
	See also: Indicator 2. *Integration of corridor priorities into development proposals*		

Objective 11: Ensure that mineral development protects and enhances the natural and historic environment and distinctive local character

How will this be achieved?

Policy framework	MLP 2: Avon and Carrant Brook Strategic Corridor; MLP 3: Lower Severn Strategic Corridor; MLP 4: North East Worcestershire Strategic Corridor; MLP 5: North West Worcestershire Strategic Corridor; MLP 6: Salwarpe Tributaries Strategic Corridor; MLP 12: Adequate and Diverse Supply of Building Stone; MLP 15: Sustainable Design Principles; MLP 16: Health and Quality of Life; MLP 17: Access and Recreation; MLP 18: Biodiversity.	MLP 19: Landscape; MLP 20: Agriculture and Soils; MLP 21: Geodiversity; MLP 22: Water Environment; MLP 23: Historic Environment; MLP 24: Transport To and From Site; MLP 25: Transport within Mineral Sites; MLP 26: Sustainable Development Delivery; MLP 27: Safeguarding Locally and Nationally Important Mineral Resources.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • District, city and borough councils as Local Planning Authorities responsible for determining applications for non-mineral development and applying safeguarding policies; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

	Indicator	Baseline	Measure
Indicators and targets	**30. Impact on flooding or flood risk**	100%	No proposals granted which would give rise to unacceptable adverse impact on flooding or flood risk. Proposals will be considered to have an unacceptable adverse impact where this is identified by a statutory body or other appropriate bodies or in the committee or delegated report prepared.

How will we know it is being achieved? *(Objective 11 continued)*

Indicators and targets	Indicator	Baseline	Measure
	31. Impact on water quality	100%	No proposals granted which would give rise to unacceptable adverse impact on water quality. Proposals will be considered to have an unacceptable adverse impact where this is identified by a statutory body or other appropriate bodies or in the committee or delegated report prepared.
	32. Impacts on internationally, nationally or locally identified natural environment assets, habitats, species or heritage assets	N/A	No proposals granted which would give rise to likely significant effects or unacceptable adverse impacts on internationally, nationally or locally identified natural environment assets, habitats, species or heritage assets (identified in Table 7.1). Proposals will be considered to have an unacceptable adverse impact where this is identified by a statutory body or other appropriate bodies or in the committee or delegated report prepared.
	See also: Indicator 2. *Integration of corridor priorities into development proposals* Indicator 34. *Integration of green infrastructure in to mineral development proposals.* Indicator 35. *Delivery of green infrastructure at minerals sites.*		

Objective 12: Ensure that mineral development protects and enhances the vitality of the local economy

How will this be achieved?

Policy framework

MLP 1: Strategic Location of Development;

MLP 2: Avon and Carrant Brook Strategic Corridor;

MLP 3: Lower Severn Strategic Corridor;

MLP 4: North East Worcestershire Strategic Corridor;

MLP 5: North West Worcestershire Strategic Corridor;

MLP 6: Salwarpe Tributaries Strategic Corridor;

MLP 7: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply;

MLP 8: Steady and Adequate Supply of Sand and Gravel;

MLP 9: Steady and Adequate Supply of Crushed Rock;

MLP 10: Steady and Adequate Supply of Brick Clay and Clay Products;

MLP 11: Steady and Adequate Supply of Silica Sand;

MLP 12: Adequate and Diverse Supply of Building Stone;

MLP 13: Supply of Other Locally and Nationally Important Industrial Minerals;

MLP 14: Supply of Energy Minerals;

MLP 15: Sustainable Design Principles;

MLP 16: Health and Quality of Life;

MLP 20: Agriculture and Soils;

MLP 22: Water Environment;

MLP 23: Historic Environment;

MLP 24: Transport To and From Site;

MLP 25: Transport within Mineral Sites;

MLP 26: Sustainable Development Delivery;

MLP 28: Safeguarding Permitted Mineral Sites and Supporting Infrastructure.

Responsible bodies

- Worcestershire County Council as Mineral Planning Authority;
- District, city and borough councils as Local Planning Authorities responsible for determining applications for non-mineral development and applying safeguarding policies;
- Statutory consultees or other appropriate bodies for technical advice.

Delivery mechanism

- Pre-application advice;
- Mineral planning applications.

How will we know it is being achieved?

Indicators and targets

Indicator	Baseline	Measure
33. Determination of applications for mineral development	100%	All applications determined within 13 weeks (16 weeks for EIA development) or within an agreed extension of time.

See also:

Indicators under ***Objectives 3, 4, 5, 6, 7*** *and* ***13***

and

Indicator 24*. Impact on soil resources and the long term potential of best and most versatile agricultural land.*

Objective 13: Optimise opportunities to integrate economic, social and environmental benefits through the delivery of high-quality multifunctional green infrastructure throughout the life of the mineral development

How will this be achieved?

Policy framework	MLP 1: Strategic Location of Development; MLP 2: Avon and Carrant Brook Strategic Corridor; MLP 3: Lower Severn Strategic Corridor; MLP 4: North East Worcestershire Strategic Corridor; MLP 5: North West Worcestershire Strategic Corridor; MLP 6: Salwarpe Tributaries Strategic Corridor; MLP 15: Sustainable Design Principles; MLP 16: Health and Quality of Life;	MLP 17: Access and Recreation; MLP 18: Biodiversity; MLP 19: Landscape; MLP 20: Agriculture and Soils; MLP 22: Water Environment; MLP 23: Historic Environment; MLP 24: Transport To and From Site; MLP 25: Transport within Mineral Sites; MLP 26: Sustainable Development Delivery.
Responsible bodies	• Worcestershire County Council as Mineral Planning Authority; • Statutory consultees or other appropriate bodies for technical advice.	
Delivery mechanism	• Pre-application advice; • Mineral planning applications.	

How will we know it is being achieved?

	Indicator	Baseline	Measure
Indicators and targets	**34. Integration of green infrastructure in to mineral development proposals**	N/A	All permissions to make appropriate contribution to green infrastructure networks. Proposals will be considered not to have made an appropriate contribution where this is identified by statutory consultees or other appropriate bodies or in the committee or delegated report prepared.
	35. Delivery of green infrastructure at minerals sites	N/A	Green infrastructure delivered on all sites in accordance with approved site design and restoration schemes. Proposals will be considered to have made adequate steps towards overall deliver of green infrastructure where no issues are identified through formal monitoring visits or enforcement action.

Third Stage Consultation on the Minerals Local Plan: Consultation Questions

Q9.1 Does the risk assessment in Chapter 9 adequately assess the issues that may impact on the delivery of the objectives of the Worcestershire Minerals Local Plan?

Objective 1
Objective 2
Objective 3
Objective 4
Objective 5
Objective 6
Objective 7
Objective 8
Objective 9
Objective 10
Objective 11
Objective 12
Objective 13

Q9.2 Does Chapter 9 set out appropriate indicators to monitor the delivery of the objectives of the Worcestershire Minerals Local Planning?

Objective 1
Objective 2
Objective 3
Objective 4
Objective 5
Objective 6
Objective 7
Objective 8
Objective 9
Objective 10
Objective 11
Objective 12
Objective 13

Q3.3 Are there any wording changes which you would suggest to Chapter 9 to improve clarity or any other issues which you think should be considered?

Appendix 1: Superseded policies

This appendix will appear in the adopted Minerals Local Plan and the text below is provided for information. However the policies in the County of Hereford and Worcester Minerals Local Plan will remain in place until a replacement Minerals Local Plan for Worcestershire is formally adopted by the Worcestershire County Council as the Mineral Planning Authority.

The following policies in the *County of Hereford and Worcester Minerals Local Plan*, adopted April 1997, were "saved" by the Secretary of State for Communities and Local Government on 7th September 2007 in exercise of the power confirmed by paragraph 1(3) of Schedule 8 to the Planning and Compulsory Purchase Act 2004 and are hereby superseded by the *Worcestershire Minerals Local Plan* in so far as they apply to Worcestershire:

Policy 1	**Preferred Areas (S&G)**
Policy 2	**Other Sand and Gravel Deposits**
Policy 5	**Abberley Hills Quarrying Policy**
Policy 6	**Extraction of Minerals Other than Aggregates**
Policy 7	**Preferred Hard Rock Extension Areas**

The effect is that all policies in the *County of Hereford and Worcester Minerals Local Plan* have now been removed or superseded in so far as it applies to Worcestershire. This document no longer forms part of the Development Plan for Worcestershire.

Former mineral workings in the Malvern Hills

Appendix 2: Information about specific sites and preferred areas

Introduction

In response to the *Second Stage Consultation on the Minerals Local Plan* and two "calls for sites" in summer 2014 and summer 2015,[1] 30 sites have been submitted for consideration by landowners, mineral operators and agents.

The location of all 30 sites can be viewed in **Annex 1** and details about all sites are set out in the *Deliverability Assessment*.[2]

National Planning Policy Guidance[3] states that Mineral Planning Authorities should plan for the steady and adequate supply of minerals in one or more of the following ways (in order of priority):

1. designating **specific sites** – where viable resources are known to exist, landowners are supportive of minerals development and the proposal is likely to be acceptable in planning terms. Such sites may also include essential operations associated with mineral extraction;

2. designating **preferred areas**, which are areas of known resources where planning permission might reasonably be anticipated. Such areas may also include essential operations associated with mineral extraction; and/or

3. designating **areas of search** – areas where knowledge of mineral resources may be less certain but within which planning permission may be granted, particularly if there is a potential shortfall in supply.

The **strategic corridors** identified in **Chapter 4** (**Key Diagram**) have the status of Areas of Search. The submitted sites have been assessed on a consistent basis in the *Deliverability Assessment*[4] to determine whether they meet the requirements for allocation as **specific sites** or **preferred areas** in the Minerals Local Plan.

The following criteria were used in the *Deliverability Assessment*. Each criterion has been categorised as green, amber or red:

1 See "Previous consultation stages" pages of the Minerals Local Plan website at www.worcestershire.gov.uk/minerals.
2 Worcestershire County Council, 2016, *Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment* for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.
3 http://planningguidance.planningportal.gov.uk/blog/guidance/minerals/planning-for-minerals-extraction/ Paragraph: 008, Reference ID: 27-008-20140306, Revision Date 06 03 2014
4 Worcestershire County Council, 2016, *Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment* for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.

- **green** indicates that the site is highly likely to be deliverable
- **amber** indicates concerns over the deliverability of the site based on the information received
- **red** indicates that there are likely to be serious constraints to delivering the site.

The overall category for each site has been determined by the lowest score against any criterion.

National policy test	Issue	Green	Amber	Red
Viable resources are known to exist	Quantity of mineral resource	Over 600,000 tonnes (proven by site-level resource assessment)	Over 600,000 tonnes (not proven by site-level resource assessment)	<600,000 tonnes
	Proposer's suggestions for processing options	Processing on-site, or off-site location specified	Processing off-site suggested but not specified	No information provided
	Mineral operator interest	Named interest confirmed by the operator(s)	Interest suggested, not confirmed by the operator(s)	No interest
Landowners are supportive of minerals development	Landowner support	Support confirmed by the landowner(s)	N/A	No support confirmed
Proposal is likely to be acceptable in planning terms	Location of site in relation to the Minerals Local Plan's spatial strategy	In a Strategic Corridor	N/A	Outside Strategic Corridor
	Transport	No significant issues identified OR Issues highlighted which can be managed through appropriate conditions and are therefore not fundamental to the deliverability of the site	Significant issues identified which might require alteration of the site boundary or significantly impact the amount of material which could be won and could potentially impact deliverability of the site	Issues identified which would be difficult to manage/address at application stage which are likely to seriously constrain delivery of the site

Officers conducted site visits to each of the submitted sites and statutory consultees and other bodies were consulted asking whether they considered the sites were likely to be acceptable in planning terms. In some cases, this information informed the *Deliverability Assessment*. However, some consultees found it difficult to comment on whether the sites were likely or unlikely to be acceptable in planning terms due to the lack of specific information about how the sites would be worked or restored. Site "informatives" are included alongside the *Deliverability Assessment* information to outline the site specific issues raised for those sites which have been allocated as **specific sites** or **preferred areas**. These should be used to inform development proposals and may help highlight issues that need to be addressed to meet the policies of the Development Plan.

Specific Site: Clifton East (submission reference B050-1504)

Figure A2.1 Specific Site: Clifton East

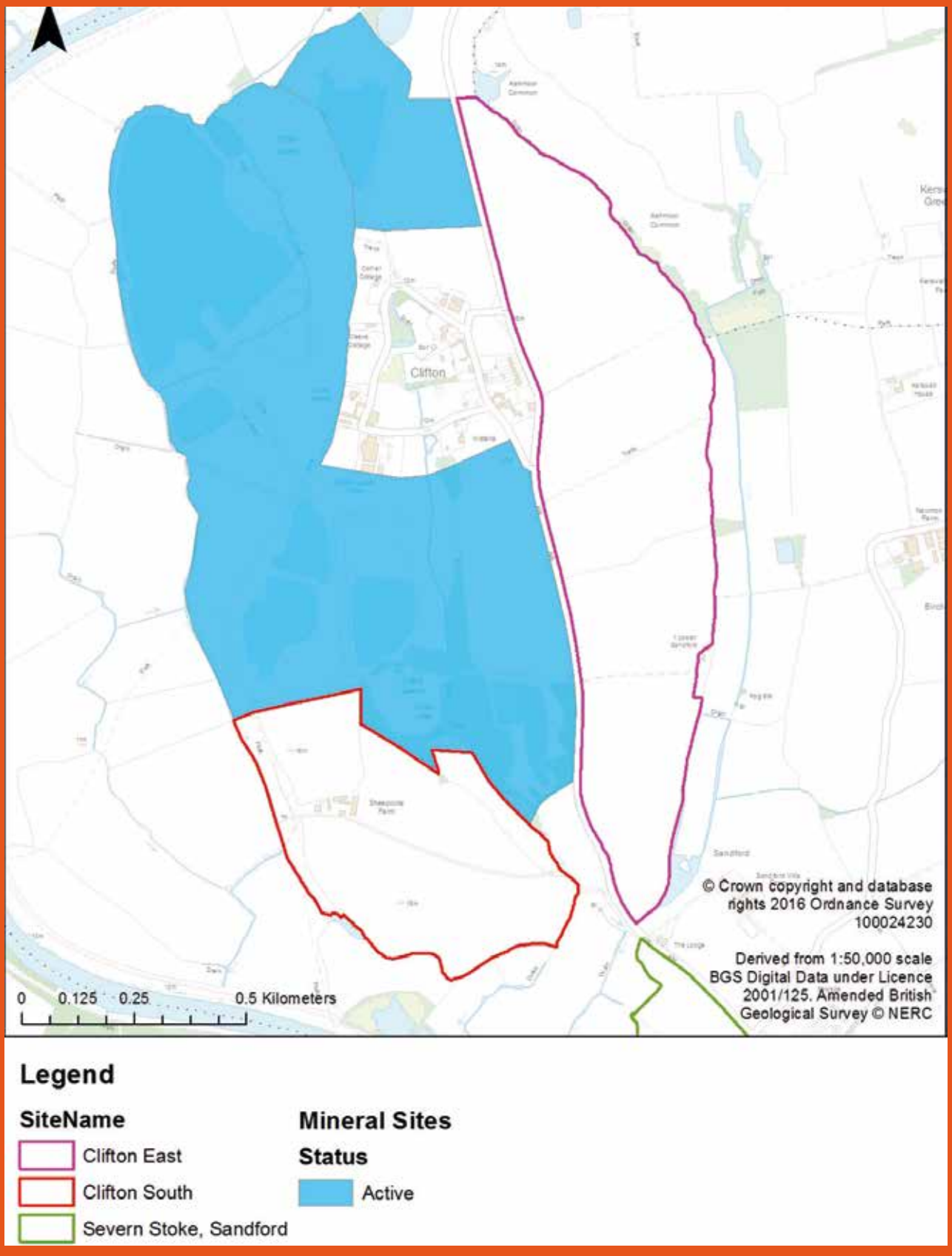


Table A2.1. Clifton East: Site information and context

Site information and context	
Grid Reference	385146, 246041
Approximate site size	52ha
Proposer's aspirations for after-use of the site	A mix of agriculture and wildlife water body, to complement the existing restoration of Clifton Quarry.
Resource area reference in Analysis of Mineral Resources in Worcestershire[5]	The site overlies part of resource area 20/4.
Minerals history	Sand and gravel is worked at the existing Clifton site, bordering the proposed site to the west (Planning permission reference number MH 2600/87 and application references T/APP/F1800/107854/P8, 407183, 407343).
Current land use	Indicated as predominantly Grade 1 agricultural land on Provisional Agricultural Land Classification maps with a small area of Grade 2 land in the east of the site. Site visit has confirmed the site to be agriculture (crops).

Table A2.2. Clifton East: Viability

Viability		
Quantity of mineral resource	1.2 million tonnes.	G
Mineral operator interest	Operator interest from Lafarge Tarmac.	G
Landowner support	Proposed on behalf of the Croome Estate.	G
Proposer's suggestions for processing options	Existing plant at Clifton Quarry.	G

5 The "Analysis of Mineral Resources in Worcestershire" can be viewed at www.worcestershire.gov.uk/mineralsbackground.

View looking east across the Clifton East Specific Site

Table A2.3. Clifton East: Whether the submitted site is likely to be acceptable in planning terms

"Proposal is likely to be acceptable in planning terms"		
Strategic Corridor	Lower Severn Strategic Corridor.	G
Highways England	Potential impacts on the A38 and M50 Junction 1. The potential traffic impacts of the identified sites should be assessed on an individual basis, and as appropriate, also a cumulative basis; this is particularly important for the cluster of sites located to the north of the M50 Junction 1, and those sites in close proximity to M5 Junction 4.	G
Worcestershire County Council Highways	County Council officers can advise that the creation of a new access onto A38 to facilitate the movement of material by road is not necessarily an insurmountable matter that couldn't satisfactorily be resolved through a sufficiently detailed planning application. Indeed, the A38 (an advisory HGV route) should provide a suitable means of distribution for the extracted material. Should the site promoter seek access via Worcestershire network, the County Council would need to be satisfied that safe and suitable access would be provided for. Furthermore, beyond the consideration of creating a new access County Council officers would be receptive to any non-vehicular means of connecting the existing and proposed operations, utilising existing access arrangements To assist in any subsequent determination, prospective applicants should also be advised to submit a detailed construction method statement that will show on and off-site operations and proposed mitigation measures.	G
Canal & River Trust	It may be possible to use the river to transport materials but that is dependant not only on the agreement of the owners of any intervening land but on other matter such as economics and the end location of the materials and processing facilities. The transhipment costs often make fright by water economically unfeasible. However if both start and end location are adjacent to the river then it can be an effective way of transporting large quantities of material, thus reducing the impact on the local road network.	G
Avon Navigation Trust	No comments received.	G
Office of Road and Rail	No Comment.	G

Table A2.4. Clifton East: Whether the submitted site is likely to be acceptable in planning terms

Overall deliverability assessment score[6]	G

6 Comprised of the lowest RAG rating given in any of the above categories. See Worcestershire County Council (2016) Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.

Table A2.5. Clifton East[7]: Site informatives

Site informatives		
Consultee	**Consultee comments[8]**	**Addressed by Minerals Local Plan Policy**
Environment		
Environment Agency	Close to the River Severn & a number of OWs [Ordinary Watercourses] transect. Site is within Flood zones 3, 2 and 1 and situated above Secondary A Superficial and Secondary B Bedrock aquifers. This site is not within a source protection zone. Is adjacent to a SSSI. Key constraints are SSSI, Water Framework Directive, and Flood Risk. Key betterment opportunities are Water Framework Directive and Flood Risk.	Policy MLP 22
Historic England	We have significant concerns regarding minerals development at the Clifton Sites – specifically Severn Stoke, Madge Hill, Severn Stoke, Sandford, Clifton South and Clifton East due to the potential impacts on heritage assets, including a number of listed buildings, including Grade II* and Grade II assets. We also have concerns about the impact on the Setting of the Registered Park and Garden at Croome Court, including the listed panorama tower as well as potential impacts to the Malvern Hills AONB. Any future allocations would need to be justified in terms of National Planning Policy which seeks to ensure that heritage assets are protected and conserved.	Policy MLP 19 and MLP 23
Lead Local Flood Authority	No watercourses on site however a lot of watercourses surrounding the site. River Severn is to the west and has a moderate ecological status and a good chemical status. The updated Flood Map for Surface Water shows a little on site and a little surrounding the site. Site is completely surrounded and eastern boundary under flood zone 3 of the River Severn. There are three floodspots over Clifton. Significant riparian buffer required to OWC [Ordinary Watercourse] on the eastern boundary (lies within floodzone 3). Potential series of ponds in alignment with OWC may need hydrological consideration.	Policy MLP 22
Natural England	The proposed site is directly adjacent to Ashmoor Common SSSI. Due to the complex hydrology of the site, proven in a recent hydrological survey, we believe a minerals site this close to the SSSI would have significant negative impacts on the site due to the potential changes in the water levels due to de-watering. We would strongly advise an alternative site.	Policy MLP 18 and MLP 22
Worcestershire Regulatory Services	No concerns over contaminated land. Relevant exposure within 200m (nearest ~12m) - impact assessment may be required to consider potential impact of PM [particulate matter] on nearby residential properties and assessment of potential impact of vehicle movements on relevant AQMAs [Air Quality Management Areas] and areas of air quality concern. Advise that as part of any planning process a noise and dust impact assessment is carried out if any of these sites are considered suitable in the future.	Policy MLP 16

7 In the case of some sites submitted for inclusion in the plan, a full planning application was also under consideration at this time. Some consultees have taken the planning application documents into consideration when writing their comments. Clifton South and Clifton East were submitted and considered as one planning application (reference 15/000006/CM).

8 The comments from consultees are quoted verbatim.

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Environment		
Worcestershire Archive & Archaeology Service	In accordance with the NPPF the applicant has submitted a report on the results of an archaeological field evaluation undertaken to support a planning application for the site, comprising geophysical survey and targeted trial trenching, which has demonstrated that heritage assets (archaeological remains) of local to regional significance survive within the application area that will be damaged or destroyed by the proposed mineral extraction (Clifton Quarry, Severn Stoke, Worcestershire: Evaluation of the South and East Extensions. Worcestershire Archaeology report No. 2260, 2015). The results of the field evaluation also highlight the general potential for additional, as yet unknown, archaeological remains that may not have been detected by the field evaluation to survive within the application site. The mineral extraction area as currently proposed will extent up to the boundary with the Ashmoor Common Site of Special Scientific Interest (SSSI). Ashmoor Common developed in a palaeochannel (WSM48345) between the Main and Worcester terraces and the stratigraphy consists of approximately one metre of well humified peat (WSM48165) above a very thin clay band overlying sands and gravel of terrace origin. Pollen analysis and radiocarbon dating have been undertaken on samples taken from the common and the radiocarbon date for the base was 5930 ffl 100bp (WSM39802). The vegetational sequence suggested by the peat stratigraphy is of a wet alder carr developing through a second phase to the present wet meadow. Wet pasture is a key characteristic of the Landscape Description Unit (MW65.2) associated with Ashmoor Common, its setting and its importance as a SSSI. The presence of peat is also significant, both in terms of its palaeoenvironmental value and as a further indicator of the sensitive, waterlogged nature of the site, which may be at risk from dewatering and changes in groundwater levels if the adjacent areas are quarried. Consequently, measures should be taken to avoid any risk to the hydrology of the SSSI and the preservation of the palaeoenvironmental deposits known to be present. In the event that planning consent is granted then, in accordance with Paragraph 141 of the NPPF, where archaeological remains are known or subsequently found to be present within the PDA [Proposed Development Area] that cannot be preserved in-situ then further archaeological works would be required to mitigate the impact of the development on the threatened remains. Any such consent should be subject to a suite of conditions to ensure that a programme of archaeological works is implemented prior to and during the consented works, to ensure any threatened remains are suitably investigated and recorded prior to damage or destruction. Section 10 (pp 17 – 18) of the field evaluation report provided by the applicant includes recommendations for further works likely to be required to mitigate the impact of mineral extraction on the archaeological record and we agree that in principle the suggested works constitute a reasoned and proportionate mitigation strategy to be adopted. These works should be secured by means of a suite of suitably worded conditions attached to any grant of permission for the scheme.	Policy MLP 19 and Policy MLP 23

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Health		
Clinical Commissioning Groups	No comments received.	Policy MLP 16
NHS England	No comments received.	Policy MLP 16
Planning		
City, Borough or District Council	No overlap with proposed allocations in the South Worcestershire Development Plan. Malvern Hills District Council noted the following key planning concerns: • Site surrounded by Flood Zone 2 • Part of site is less than 50m from about 10 properties in Clifton • East boundary of the site is adjacent to Ashmoor Common SSSI • Listed building less than 50m from the site • Priority species and habitats within the site • Site is only about 200m from Clifton • >60% likelihood Best & Most Versatile (BMV) land Potential for cumulative environmental and community impact. Existing quarry and other proposed sites nearby.	Policy MLP 15, Policy MLP 16, Policy MLP 18, Policy MLP 20, Policy MLP 21, Policy MLP 22 and Policy MLP 23
Utilities		
CLH	No comment.	Policy MLP 15
National Grid	No comment.	Policy MLP 15
Western Power	No comments received.	Policy MLP 15
Water Undertakers	**Severn Trent**: We have no objection to the consideration of Clifton as a Specific Site.	Policy MLP 15 and Policy MLP 22

Specific Site: Clifton South (submission reference B050-1504)

Figure A2.2 Specific Site: Clifton South

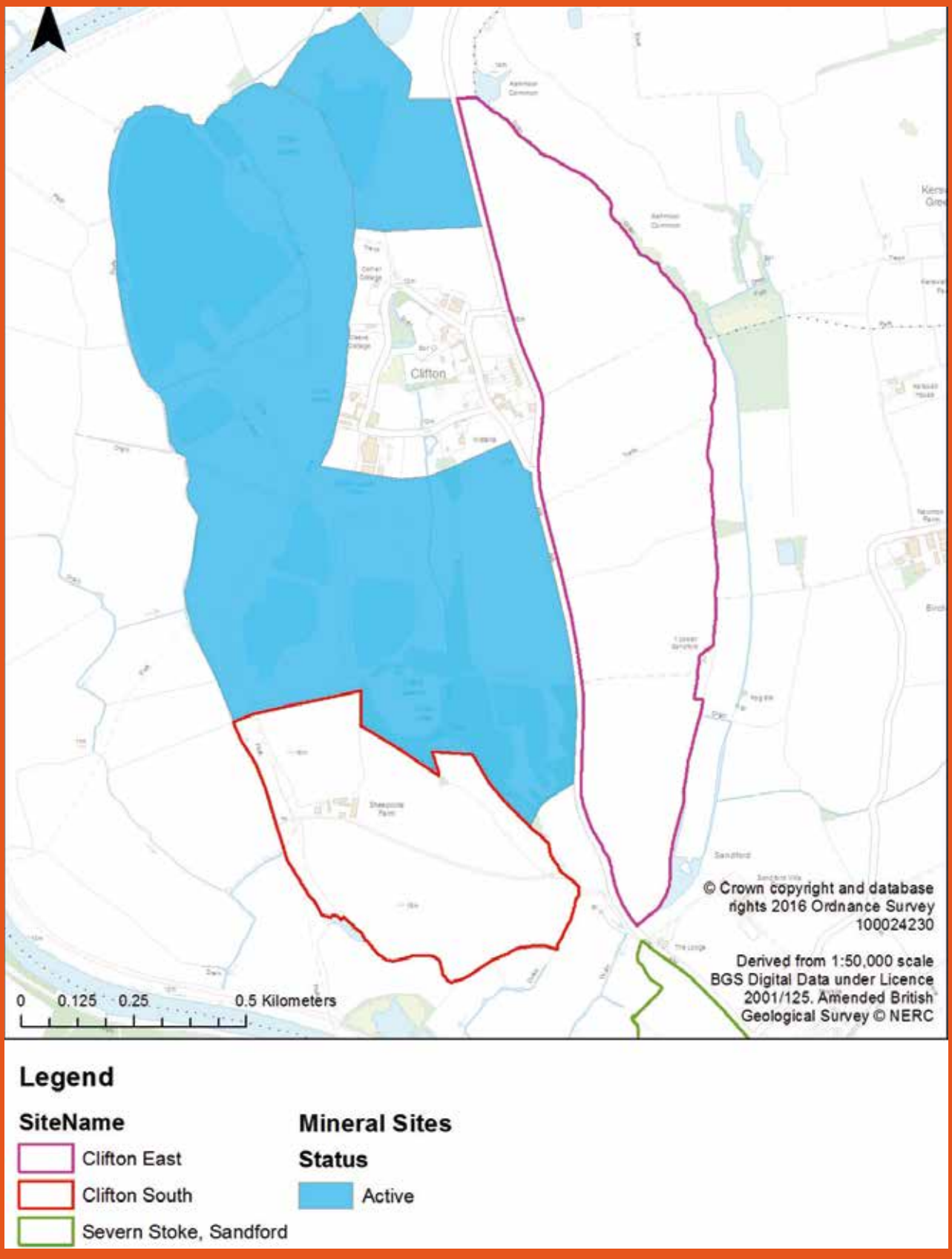


Table A2.6. Clifton South: Site information and context

Site information and context	
Grid Reference	384681, 245250
Approximate site size	28ha
Proposer's aspirations for after-use of the site	To complement the existing restoration of Clifton Quarry to a mix of agriculture and wildlife waterbody.
Resource area reference in Analysis of Mineral Resources in Worcestershire[9]	The site overlies part of resource area 20/4.
Minerals history	Sand and Gravel is worked at Clifton site, bordering the proposed site to the north. (Planning permission reference number MH 2600/87 and application reference T/APP/F1800/107854/P8 407183 407343).
Current land use	Indicated as predominantly Grade 3 agricultural land with an area of Grade 2 land to the south of the site and a narrow area of Grade 1 land on the eastern boundary of the proposed site on Provisional Agricultural Land Classification maps. Site visit has confirmed the site to be agriculture (crops).

Table A2.7. Clifton South: Viability

Viability		
Quantity of mineral resource	1 million tonnes.	G
Mineral operator interest	Operator interest from Lafarge Tarmac.	G
Landowner support	Proposed on behalf of the Croome Estate.	G
Proposer's suggestions for processing options	Existing plant at Clifton Quarry.	G

9 The "Analysis of Mineral Resources in Worcestershire" can be viewed at www.worcestershire.gov.uk/mineralsbackground.

Views from within the Clifton South Specific Site

Table A2.8. Clifton South: Whether the submitted site is likely to be acceptable in planning terms

"Proposal is likely to be acceptable in planning terms"		
Strategic Corridor	Lower Severn Strategic Corridor.	G
Highways England	Potential impacts on the A38 and M50 Junction 1. The potential traffic impacts of the identified sites should be assessed on an individual basis, and as appropriate, also a cumulative basis; this is particularly important for the cluster of sites located to the north of the M50 Junction 1, and those sites in close proximity to M5 Junction 4.	G
Worcestershire County Council Highways	County Council officers can advise that the creation of a new access onto A38 to facilitate the movement of material by road is not necessarily an insurmountable matter that couldn't satisfactorily be resolved through a sufficiently detailed planning application. Indeed, the A38 (an advisory HGV route) should provide a suitable means of distribution for the extracted material. Should the site promoter seek access via Worcestershire network, the County Council would need to be satisfied that safe and suitable access would be provided for. Furthermore, beyond the consideration of creating a new access County Council officers would be receptive to any non-vehicular means of connecting the existing and proposed operations, utilising existing access arrangements. To assist in any subsequent determination, prospective applicants should also be advised to submit a detailed construction method statement that will show on and off-site operations and proposed mitigation measures.	G
Canal & River Trust	It may be possible to use the river to transport materials but that is dependant not only on the agreement of the owners of any intervening land but on other matter such as economics and the end location of the materials and processing facilities. The transhipment costs often make fright by water economically unfeasible. However if both start and end location are adjacent to the river then it can be an effective way of transporting large quantities of material, thus reducing the impact on the local road network.	G
Avon Navigation Trust	No comments received.	G
Office of Road and Rail	No Comment.	G

Table A2.9. Clifton South: Deliverability assessment result

Overall deliverability assessment score[10]	G

10 Comprised of the lowest RAG rating given in any of the above categories. See Worcestershire County Council, 2016, Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.

Table A2.10. Clifton South[11]: Site informatives

Site informatives		
Consultee	**Consultee comments[12]**	**Addressed by Minerals Local Plan Policy**
Environment		
Environment Agency	Close to the River Severn & a number of OWs [Ordinary Watercourses] transect. Site is within Flood zones 3, 2 and 1 and situated above Secondary A Superficial and Secondary B Bedrock aquifers. This site is not within a source protection zone. Is adjacent to a SSSI. Key constraints are SSSI, Water Framework Directive, and Flood Risk. Key betterment opportunities are Water Framework Directive and Flood Risk.	Policy MLP 22
Historic England	We have significant concerns regarding minerals development at the Clifton Sites – specifically Severn Stoke, Madge Hill, Severn Stoke, Sandford, Clifton South and Clifton East due to the potential impacts on heritage assets, including a number of listed buildings, including Grade II* and Grade II assets. We also have concerns about the impact on the Setting of the Registered Park and Garden at Croome Court, including the listed panorama tower as well as potential impacts to the Malvern Hills AONB. Any future allocations would need to be justified in terms of National Planning Policy which seeks to ensure that heritage assets are protected and conserved.	Policy MLP 19 and Policy MLP 23
Lead Local Flood Authority	No watercourses on site however a lot of watercourses surrounding the site. River Severn is to the west and has a moderate ecological status and a good chemical status. The updated Flood Map for Surface Water shows a little on site and a little surrounding the site. Site is completely under flood zone 3 of the River Severn. There are three floodspots over Clifton. Significant riparian buffer required to OWC [Ordinary Watercourse] on the eastern boundary (lies within floodzone 3). Potential series of ponds in alignment with OWC may need hydrological consideration.	Policy MLP 22
Natural England	600m away from Ashmoor Common but on far side of existing quarry and therefore impacts unlikely.	Policy MLP 18 and Policy MLP 21
Worcestershire Regulatory Services	No concerns over contaminated land. Relevant exposure within 200m (nearest ~12m) - impact assessment may be required to consider potential impact of PM [particulate matter] on nearby residential properties and assessment of potential impact of vehicle movements on relevant AQMAs [Air Quality Management Areas] and areas of air quality concern. Advise that as part of any planning process a noise and dust impact assessment is carried out if any of these sites are considered suitable in the future.	Policy MLP 16

11 In the case of some sites submitted for inclusion in the plan, a full planning application was also under consideration at this time. Some consultees have taken the planning application documents into consideration when writing their comments. Clifton South and Clifton East were submitted and considered as one planning application (reference 15/000006/CM).

12 The comments from consultees are quoted verbatim.

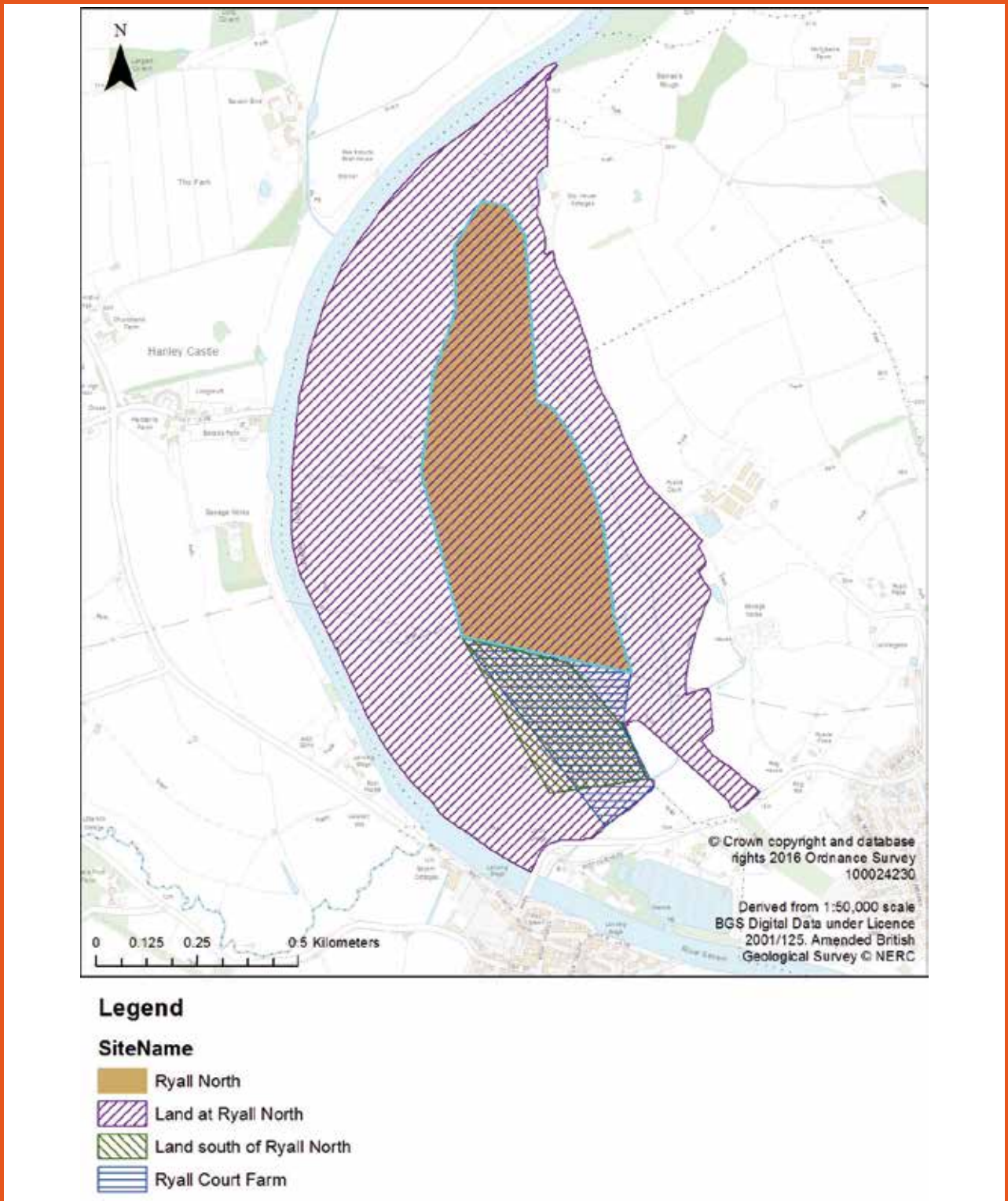
Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Environment		
Worcestershire Archive & Archaeology Service	In accordance with the NPPF the applicant has submitted a report on the results of an archaeological field evaluation undertaken to support a planning application for the site, comprising geophysical survey and targeted trial trenching, which has demonstrated that heritage assets (archaeological remains) of local to regional significance survive within the application area that will be damaged or destroyed by the proposed mineral extraction (Clifton Quarry, Severn Stoke, Worcestershire: Evaluation of the South and East Extensions. Worcestershire Archaeology report No. 2260, 2015). The results of the field evaluation also highlight the general potential for additional, as yet unknown, archaeological remains that may not have been detected by the field evaluation to survive within the application site. In the event that planning consent is granted then, in accordance with Paragraph 141 of the NPPF, where archaeological remains are known or subsequently found to be present within the PDA that cannot be preserved in-situ then further archaeological works would be required to mitigate the impact of the development on the threatened remains. Any such consent should be subject to a suite of conditions to ensure that a programme of archaeological works is implemented prior to and during the consented works, to ensure any threatened remains are suitably investigated and recorded prior to damage or destruction. Section 10 (pp 17 – 18) of the field evaluation report provided by the applicant includes recommendations for further works likely to be required to mitigate the impact of mineral extraction on the archaeological record and we agree that in principle the suggested works constitute a reasoned and proportionate mitigation strategy to be adopted. These works should be secured by means of a suite of suitably worded conditions attached to any grant of permission for the scheme.	Policy MLP 23
Health		
Clinical Commissioning Groups	No comments received	Policy MLP 16
NHS England	No comments received	Policy MLP 16
Planning		
City, Borough or District Council	No overlap with proposed allocations in the South Worcestershire Development Plan. Malvern Hills District Council noted the following key planning concerns: • Flood Zone 3 • Site includes Sheepcote Farm • East corner of the site is ancient woodland • Priority species and habitats within the site • Site is adjacent to a Special Wildlife Site. Also only 150m from another Special Wildlife Site • Possible cumulative environmental impact. Existing and submitted sites at Clifton East & South and Severn Stoke (Sandford & Madge Hill) in close proximity	Policy MLP 15, Policy MLP 16, Policy MLP 18, Policy MLP 20, Policy MLP 22

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Utilities		
CLH	We can confirm that our client's apparatus, the CLH Pipeline System – Energy Act 2013 (CLH PS), may be affected by your proposals. You should note that the interests of the CLH Pipeline System are conserved by means of the Energy Act 2013, in particular Part IV of the Act, and other legislation such as the Pipeline Safety Regulations 1996. It is, however, the Energy Act 2013 that prohibits any development and most intrusive activities within the Easement Strip without specific consent from CLH Pipeline System. CLH Pipeline System Easement Strips are 6 metres wide and can incorporate other associated CLH Pipeline System facilities.	Policy MLP 15
National Grid	No comment.	Policy MLP 15
Western Power	No comments received.	Policy MLP 15
Water Undertakers	**Severn Trent**: We have no objection to the consideration of Clifton as a Specific Site.	Policy MLP 15 and Policy MLP 22

View into the Clifton South Specific Site

Specific Site: Land at Ryall North (submission reference B043-126, B043-126, D020-1793, D009-2296[13]

Figure A2.3 Specific Site: Land at Ryall North



13 Four different site boundaries were submitted for consideration at Ryall North during the development of the Minerals Local Plan: "Land at Ryall North (Croome Estate)", "Ryall North (Cemex)", "Land South of Ryall North" and "Ryall Court Farm". Two of these had insufficient resources to meet the tests to be allocated as specific sites in their own right; however, the largest area (Land at Ryall North (Croome Estate) encompasses all of the proposals and meets the requirements for allocation as a specific site. For further information see Worcestershire Minerals Local Plan Background Document, September 2016, Call for Sites – Deliverability Assessment, available at www.worcestershire.gov.uk/mineralsbackground.

Table A2.11. Land at Ryall North: Site information and context

Site information and context	
Grid Reference	385063, 241707
Approximate site size	126ha
Proposer's aspirations for after-use of the site	Unknown.
Resource area reference in Analysis of Mineral Resources in Worcestershire[14]	The site overlies part of resource area 7/19.
Minerals history	Planning permission granted for sand and gravel extraction in this location (Application reference 15/000013/CM).
Current land use	Indicated as Grade 3 and 4 agricultural land on Provisional Agricultural Land Classification maps. Site visit has confirmed the site to be grassland.

Table A2.12. Land at Ryall North: Viability

Viability		
Quantity of mineral resource	1.4 million tonnes.	G
Mineral operator interest	Operator interest from Cemex.	G
Landowner support	Proposed by the Croome Estate.	G
Proposer's suggestions for processing options	Off site at Ryall House Farm.	G

14 The "Analysis of Mineral Resources in Worcestershire" can be viewed at www.worcestershire.gov.uk/mineralsbackground.

Views across the Land at Ryall North Specific Site

Table A2.13. Land at Ryall North: Whether the submitted site is likely to be acceptable in planning terms

"Proposal is likely to be acceptable in planning terms"		
Strategic Corridor	Lower Severn Strategic Corridor.	G
Highways England	Potential impacts on the A38 and M50 Junction 1. The potential traffic impacts of the identified sites should be assessed on an individual basis, and as appropriate, also a cumulative basis; this is particularly important for the cluster of sites located to the north of the M50 Junction 1, and those sites in close proximity to M5 Junction 4.	G
Worcestershire County Council Highways	County Council can advise that the creation of a new access onto the A4104 to facilitate the movement of material by road is not necessarily an insurmountable matter that couldn't satisfactorily be resolved through a sufficiently detailed planning application. Indeed, the proximity of the A38 (an advisory HGV route) to the site should provide a suitable means of distribution for the extracted material. Nevertheless, the County Council would need to be satisfied that safe and suitable access would be provided for, incorporating adequate forward and junction visibility splays, sufficient width to accommodate either two-way way movements or sufficient passing points, together with a suitable bound surfacing and adequate signage along the proposed vehicle route to warn of slow moving vehicles and turning vehicles near to the site entrance. To assist in any subsequent determination, prospective applicants should also be advised to submit a detailed construction method statement that will show on and off-site operations and proposed mitigation measures. Furthermore, beyond the consideration of road hauling minerals off site, County Council officers seek the potential for waterborne transport to be given prominence as a potential alternative / supplementary means of movement with the site option.	G
Canal & River Trust	The Canal & River Trust supports in principle the use of the River Severn to carry freight. However we have to consider any proposal to do so against the needs of other users of the waterspace to ensure that the proposal does not have an adverse impact on their safety. A Freight Risk Assessment will be required to be sumbitted to the council and the Trust to confirm that the continuation and intensification of moving freight by water in this location is acceptable, based on the information provided. This would not, mean however that unlimited use of the river for the movement of freight would be deemed acceptable. Any increase would be subject to our permission and would need to be reconsidered based on location, level of use proposed and the impact on the safety of both existing and proposed users at the time.	G
Avon Navigation Trust	No comments received.	G
Office of Road and Rail	No Comment.	G

Table A2.14. Deliverability assessment result

Overall deliverability assessment score[15]	G

15 Comprised of the lowest RAG rating given in any of the above categories. See Worcestershire County Council, 2016, *Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment* for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.

Table A2.15. Land at Ryall North[16]: Site informatives

Site informatives		
Consultee	**Consultee comments[17]**	**Addressed by Minerals Local Plan Policy**
Environment		
Environment Agency	Adjacent to the River Severn & a number of OWs [Ordinary Watercourses] transect. Site is within Flood zones 3b, 2 and 1 and situated above Secondary A Superficial and Secondary B Bedrock aquifers. This site is not within a source protection zone. Is near a SSSI. Key constraints are Water Framework Directive, Pollution control and Flood Risk. Key betterment opportunities are Water Framework Directive and Flood Risk.	Policy MLP 22
Historic England	We have significant concerns regarding mineral development at the Ryall sites, specifically Ryall North and Land at Ryall North due to the potential impacts on the Upton on Severn Conservation Area and the experience of the approach to the Conservation Area. We are also concerned about the impact on a number of listed buildings in Upton on Severn, in the area of Hanley Castle as well as within the wider area. Any future allocations would need to be justified in terms of National Planning Policy which seeks to ensure that heritage assets are protected and conserved.	Policy MLP 23
Lead Local Flood Authority	5 or 6 onliine ditches/drains. 1 offline ditch. River Severn is adjacent to the west and has a moderate ecological status. The updated Flood Map for Surface Water shows a lot on site, especially on the eastern side and along the River Severn boundary. Site is completely under flood zone 3 of the River Severn. There is one floodspot north of the site and some to the south. Potential significant SW issues. Topographical survey may be required. SW may be attributable to the ditch/OWC on the eastern boundary. Two SW flows indicated in a NE to SW direction topographical survey may be required.	Policy MLP 22
Natural England	Would need reassurance that there would be no impacts on Upton Ham SSSI which is a wetland site just downstream from the proposed site which is adjacent to the River Seven.	Policy MLP 18 and Policy MLP 22
Worcestershire Regulatory Services	No concerns over contaminated land. Relevant exposure within 200m (nearest ~12m) - impact assessment may be required to consider potential impact of PM [particulate matter] on nearby residential properties and assessment of potential impact of vehicle movements on relevant AQMAs [Air Quality Management Areas] and areas of air quality concern. Advise that as part of any planning process a noise and dust impact assessment is carried out if any of these sites are considered suitable in the future.	Policy MLP 16

16 In the case of some sites submitted for inclusion in the plan, a full planning application was also under consideration at this time. Some consultees have taken the planning application documents into consideration when writing their comments. (Ryall Court Farm planning application reference 15/000013/CM).

17 The comments from consultees are quoted verbatim.

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Environment		
Worcestershire Archive & Archaeology Service	There are a number of known heritage assets of archaeological interest within the PDA, including several that do not fall within the smaller site proposed for extraction by Cemex. Known heritage assets include the site of building/ house platforms at Race Course, Ripple (WSM05944) which were recorded as surviving as earthworks in the late 1990s but are now under cultivation, areas of ridge and furrow cultivation earthworks, plots, possible house platforms and a trackway to the west and southwest of Rag House (WSM32417), again recorded as earthworks in the late 90s but also now under cultivation, and the possible site of a medieval wharf recorded in documents dating from 1407 (WSM39974). The PDA also has the potential to contain additional, as yet unknown heritage assets of archaeological interest and waterlogged environmental/ palaeoenvironmental deposits buried beneath alluvial deposits on the floodplain. Part of the PDA is located in an Area of Palaeolithic Potential, situated on the Worcester Member. Similarly dated Worcester Member deposits at Aston Mill, Beckford, have produced extensive palaeoenvironmental, artefactual, human and faunal remains, highlighting the potential of these deposits. In line with the National Planning Policy Framework (NPPF, DCLG, 2012), the applicant should be required to produce a heritage statement describing the significance of any heritage assets affected by the proposed development, including any contribution made by their setting. The level of detail should be proportionate to the importance of the asset and no more than is sufficient to understand the potential impact of the proposal on their significance. The heritage statement should accompany any forthcoming planning application and include an assessment of the impact of the development on the setting of any designated assets that may be affected by the proposed development. The heritage statement should also incorporate the results of a field evaluation, which will provide information on the presence or absence, extent, date and local, regional or national significance of any archaeological remains, including palaeoenvironmental deposits, within the PDA. The evaluation should include a geoarchaeological assessment of the underlying Worcester Member. Due to the location of the PDA on the floodplain and the depth at which archaeological remains may be buried by alluvial deposits it is noted that a standard field evaluation may be impracticable. In this instance an appropriate programme of archaeological works immediately in advance of and/ or during mineral extraction may be agreed in consultation with the minerals planning authority. In the event that planning consent is granted then, in accordance with Paragraph 141 of the NPPF, where heritage assets of archaeological interest are found to be present within the PDA that cannot be preserved in-situ then archaeological works would be required to mitigate the impact of the development on the threatened remains. These works should be secured by means of a suite of suitably worded conditions attached to any grant of permission for the scheme.	Policy MLP 23
Health		
Clinical Commissioning Groups	No comments received.	Policy MLP 16
NHS England	No comments received.	Policy MLP 16

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Planning		
City, Borough or District Council	No overlap with proposed allocations in the South Worcestershire Development Plan. Malvern Hills District Council noted the following key planning concerns: • Flood Zone 3 • Adjacent to Ryall Court + Day House Cottages • Adjacent to ancient woodland • Adjacent to Conservation Area • Adjacent to Special Wildlife Site • Adjacent to Ryall Court and Day House cottages • Only 150m from Holly Green • Only 150m from Upton	Policy MLP 15, Policy MLP 16, Policy MLP 18, Policy MLP 23
Utilities		
CLH	No comment.	Policy MLP 15
National Grid	No comment.	Policy MLP 15
Western Power	No comments received.	Policy MLP 15
Water Undertakers	**Severn Trent**: We have no objection to the consideration of Ryall North as a Specific Site.	Policy MLP 15 and Policy MLP 22

Views across the Land at Ryall North Specific Site

Preferred Area: Land North of Wolverley Road (submission reference D026-2397)

Figure A2.4 Preferred Area: Land North of Wolverley Road

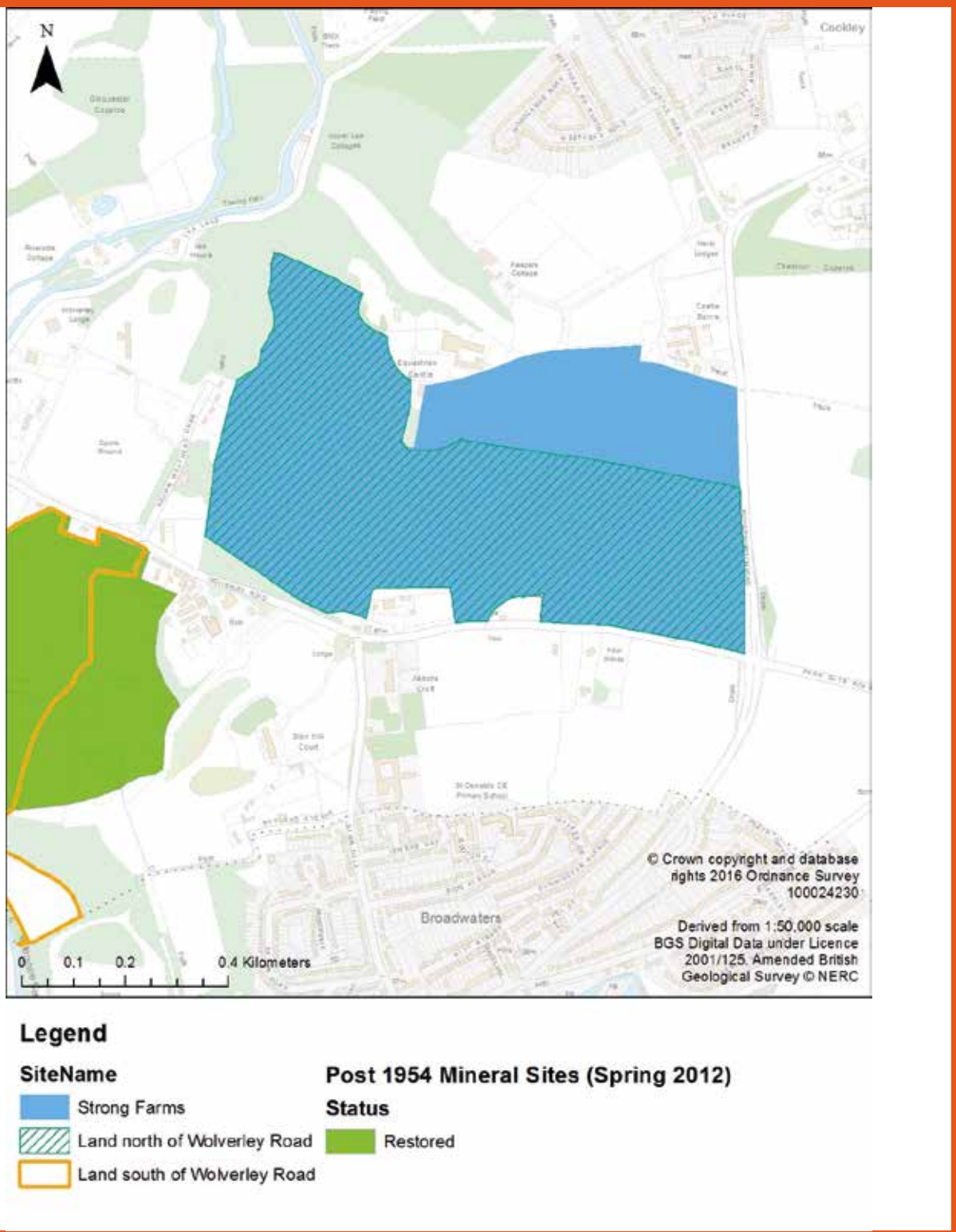


Table A2.16. Land North of Wolverley Road: Site information and context

Site information and context	
Grid Reference	384089, 279032
Approximate site size	40ha
Proposer's aspirations for after-use of the site	Unknown.
Resource area reference in Analysis of Mineral Resources in Worcestershire[18]	The site overlies part of resource area 2/21 and a small section at the north west of the site overlies resource area 10/25. Much of the western half of the site also overlies part of resource area 10/7.
Minerals history	Sand and Gravel was previously worked at an average depth of 3.4m at Wolverley site south west of the proposed location as shown above between 1978 and 1995 (Planning permission reference number 407153). Minerals have also been worked previously at a site approximately 1.2km, at its closest point, to the south west of this proposed site; however no site details are available.
Current land use	Indicated as Grade 3 on Provisional Agricultural Land Classification maps. However, ADAS & Defra post-1988 data indicates that the site contains large areas of Grade 2, and 3a agricultural land, with only a small amount of grade 3b present. Site visit has confirmed the site to be grassland.

Table A2.17. Land North of Wolverley Road: Viability

Viability		
Quantity of mineral resource	1.8million tonnes (unproven).	A
Mineral operator interest	Proven operator interest from WCL quarries.	G
Landowner support	Support from landowner Mr Strong.	G
Proposer's suggestions for processing options	On site.	G

18 The "Analysis of Mineral Resources in Worcestershire" can be viewed at www.worcestershire.gov.uk/mineralsbackground.

Table A2.18. Land North of Wolverley Road: Whether the submitted site is likely to be acceptable in planning terms

"Proposal is likely to be acceptable in planning terms"		
Strategic Corridor	Lower Severn Strategic Corridor.	G
Highways England	Potential impacts on the M5 Junction 3 and 4. The potential traffic impacts of the identified sites should be assessed on an individual basis, and as appropriate, also a cumulative basis; this is particularly important for the cluster of sites located to the north of the M50 Junction 1, and those sites in close proximity to M5 Junction 4.	G
Worcestershire County Council Highways	County Council officers can advise that the creation of a new access onto either A449 Wolverhampton Road or B4189 Wolverley Road to facilitate the movement of material by road is not necessarily an insurmountable matter that couldn't satisfactorily be resolved through a sufficiently detailed planning application. Indeed, the proximity of the A449 (an advisory HGV route) to the site should provide a suitable means of distribution for the extracted material. Nevertheless, the County Council would need to be satisfied that safe and suitable access would be provided for, incorporating adequate forward and junction visibility splays, sufficient width to accommodate large vehicles, together with suitable bound surfacing and adequate signage along the proposed vehicle route to the site entrance. Given the presence of an AQMA within the Horsefair in Kidderminster, the operating times and distribution of heavy vehicles would need careful consideration. However, as with the access arrangements, it is the County Council's view that this is not an insurmountable matter that couldn't satisfactorily be resolved through a sufficiently detailed planning application. To assist in any subsequent determination, prospective applicants should also be advised to submit a detailed construction method statement that will show on and off-site operations and proposed mitigation measures. This should include consideration of the potential impacts of increased right turners at A449/B4189.	G
Canal & River Trust	Potential to have an adverse impact on the conservation area through visual impact and also increased noise / general disturbance. In addition given the proximity to the canal there may be increased ecological impacts and any development of these sites would need to fully assess these impacts and include detailed mitigation measures. The Trust would in principle support the use of the canal to carry freight though this would largely depend on the extent required and maintenance implications for the waterway. The Trust should be contacted for further discussions if this is to be pursued as an option as the particular working practises and frequency required would be key to determining the overall suitability of any proposals for freight on the waterway. The impact of any such proposals on the conservation area would also need to be fully explored. The movement of vehicles from the site would need to be fully considered through the submission of a Transport Assessment. The haulage routes for the proposed sites will be key and their impact on any routes adjacent or over the canal, in particular impact on bridges, would need to be fully considered as part of any future submissions	G
Avon Navigation Trust	No comments received.	G
Office of Road and Rail	No Comment.	G

Table A2.19. Deliverability assessment result

Overall deliverability assessment score[19]	A

Table A2.20. Land North of Wolverley Road: Site informatives

Site informatives		
Consultee	**Consultee comments[20]**	**Addressed by Minerals Local Plan Policy**
Environment		
Environment Agency	No comments received.	Policy MLP 22
Historic England	It is likely that this site contributes to the significance of adjacent heritage assets including the Grade II listed Lea Castle lodge and potentially the landscape park setting of the former castle as well as the River Severn historic landscape. Worcestershire County Council needs to be certain that any allocation of this site within the Minerals Local Plan complies with Section 12 of the NPPF. Such available evidence includes the Historic Environment Record, Conservation Area Appraisals and Management Plans, National Listing, Heritage at Risk Register, Local List, Historic Characterisation, Heritage Impact Assessment, SEA, and local conservation and archaeology officers/ advisers in addition to the Worcestershire archaeological resource assessment mentioned above. At present HE is of the view that there is insufficient information available to demonstrate that the potential impact of the proposed minerals site allocations on environmental considerations such as the historic environment, including designated and non-designated heritage assets, has been considered in respect of taking the site forward as a Specific Site within the Minerals Local Plan. If the site is to be advanced you will need to demonstrate that great weight has been given to the conservation of the affected heritage assets and that all reasonable efforts have been made to safeguard their importance including any appropriate mitigation.	Policy MLP 23
Lead Local Flood Authority	No watercourses on site, 2 to the west of the site and 2 offline drains to the south east of the site. River Stour is to the west and has a poor ecological status and failed chemical status. Canal is between site and the River Stour, this has a moderate ecological status. The updated Flood Map for Surface Water shows a few small spots of 1 in 1000. There are no flood spots on site.	Policy MLP 22

19 Comprised of the lowest RAG rating given in any of the above categories. See Worcestershire County Council, 2016, *Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment* for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.

20 The comments from consultees are quoted verbatim.

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Environment		
Natural England	Site is within 1km of the following Sites of Special Scientific Interest (SSSIs): • Hurcott and Podmore Pools SSSI • Stourvale Marsh SSSI • Puxton Marsh SSSI Natural England is not satisfied that the proposed activities being carried out in strict accordance with the details of the application, as submitted, will not damage or destroy the interest features for which the sites have been notified. We have serious concerns over the potential impacts of these proposed mineral sites. There is already an issue with water levels in this area which is impacting on the SSSIs. Without detailed information on proposed works, mitigation and monitoring we would be unable to support these proposed mineral site applications due to the risk they pose to the hydrologically sensitive SSSIs in the area.	Policy MLP 18
Worcestershire Regulatory Services	No concerns over contaminated land. Relevant exposure within 200m (nearest ~12m) - impact assessment may be required to consider potential impact of PM [particulate matter] on nearby residential properties and assessment of potential impact of vehicle movements on relevant AQMAs [Air Quality Management Areas] and areas of air quality concern. Advise that as part of any planning process a noise and dust impact assessment is carried out if any of these sites are considered suitable in the future.	Policy MLP 16
Worcestershire Archive & Archaeology Service	There are no known/ recorded heritage assets of archaeological interest within the PDA, with the exception of the former site of a World War II grass landing strip, although it has not been subject to any form of systematic archaeological assessment. However, the presence of unrecorded, as yet unknown, below-ground heritage assets (archaeological remains) cannot be discounted and stray finds of archaeological material including a silver denarius of Vitellius (AD 69-69) have been made in the PDA. In line with the National Planning Policy Framework (NPPF, DCLG, 2012), the applicant should be required to produce a heritage statement describing the significance of any heritage assets affected by the proposed development, including any contribution made by their setting. The level of detail should be proportionate to the importance of the asset and no more than is sufficient to understand the potential impact of the proposal on their significance. The heritage statement should accompany any forthcoming planning application and include an assessment of the impact of the development on the setting of any designated heritage assets in the vicinity of the PDA potentially including, but not limited to, the Grade II listed Sion Hill Court (NHLE 1100640) to the south and the Grade II Listed North Lodges (NHLE 1296589) to the northeast. The heritage statement should also incorporate the results of a field evaluation, which will provide information on the presence or absence, extent, date and local, regional or national significance of any archaeological remains, including palaeo-environmental deposits, within the PDA. In the event that planning consent is granted then, in accordance with Paragraph 141 of the NPPF, where archaeological remains are found to be present within the PDA that cannot be preserved in-situ then further archaeological works would be required to mitigate the impact of the development on the threatened remains. These works should be secured by means of a suite of suitably worded conditions attached to any grant of permission for the scheme.	Policy MLP 23

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Environment		
Wyre Forest conservation officer	North Lodges are largely intact and date from 1818. These are Grade II listed and Officers would not be supportive of an application for partial demolition to provide vehicular access to a minerals extraction site. The road junction here is also complex which effectively prevents the use of this access point. The present southern access onto the site from the B4189 is severely restricted in terms of its visibility splays which are limited due to the historic boundary walls associated with the Locally Listed Lodge Houses 1 and 2 originally serving Lea Castle (which was pulled down in 1945). Dating to c.1818, these served as the entrance from Wolverley. No 1 House is a square building, red brick construction, with castellated parapet to roof, buttresses to each corner, hood moulds to windows and doors.and an extension to rear. No 2 House is a square building, red brick construction, with castellated parapet to roof, buttresses to each corner, hood moulds to windows and doors, wall for Lea Castle estate springs from the western elevation of the building. Given that their northern counterparts are already listed it is considered that if these structures were at risk of demolition to provide a better access to the site that they would be suitable candidates for spot listing, given their age. In the event that the LPA was not supportive of an application for listing it is my opinion that a privately funded application would be very likely to succeed if the buildings were at risk of substantial harm. The Conservation Officer has therefore expressed concern regarding how a potential future minerals extraction site could be accessed.	Policy MLP 23 and Policy MLP 24
Health		
Clinical Commissioning Groups	No comments received.	Policy MLP 16
NHS England	No comments received.	Policy MLP 16

Views within the Land North of Wolverley Road Preferred Area

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Planning		
City, Borough or District Council	Wyre Forest District Council noted that they are currently in the process of preparing a new Local Plan, which will involve a study of the whole district for areas to be developed to meet housing need. It is likely that the Lea Castle area could be developed to provide residential and employment development. Other greenfield sites to the North East of Kidderminster may potentially also be required to meet housing needs. They do have concerns that any proposed mineral extraction north and south of Wolverley Road could have a detrimental impact by virtue of dust, noise and disturbance for the duration of the period of extraction on potential future residents in the Lea Castle area and which could have a negative impact on the development of the site. **Neighbouring Authorities** ***Staffordshire***: This site is 3km from the county boundary at its closest I would expect there to be limited impact on the county from this distance and impacts will no doubt be considered in landscape and visual impact assessments prepared as a matter of course in any formal proposals. It is unlikely that archaeological remains within Staffordshire will be an indicator for archaeological potential upon this site. There are also no designated archaeological heritage assets along this section of the Staffordshire/ Worcestershire border. There are no historic built environment constraints affecting this proposal. No doubt the applicants will be consulting with the Worcestershire Conservation Officer regarding potential impacts upon built heritage assets within Worcestershire. ***South Staffordshire:*** There is nothing to suggest that the principle of mineral extraction in this location would be unacceptable in planning terms.	Policy MLP 16, Policy MLP 19, Policy MLP 23, Policy MLP 27 and Policy MLP 28
Utilities		
CLH	No comment.	Policy MLP 15
National Grid	No comment.	Policy MLP 15
Western Power	No comments received.	Policy MLP 15
Water Undertakers	**Severn Trent**: The proposed site is contained within the groundwater catchment area for our abstraction boreholes at Beechtree Lane, including Source Protection Zone 3. As this site is located on the Wildmoor Formation from which the Beechtree Lane boreholes abstract, any proposed development of this site may pose a risk to the Public Water Supply abstraction at Beechtree Lane in terms of water quality (and potentially resource). Given the distance from the abstraction boreholes, we consider that the site may be suitable for mineral development or may be acceptable in planning terms, but if this site was to be developed, we would ask that monitoring and mitigation controls (i.e. groundwater quality and observation boreholes) were included as part of any further development proposal. **South Staffs Water**: Site is within the total catchment of Cookley pumping station. Development of this site should proceed with caution and close regard to the protection of water resources. We will be carrying out further studies to evaluate their threat to public water supply and reserve the right to object in future.	Policy MLP 15 and Policy MLP 22

Preferred Area: Ryall East (submission reference C015-1157 Ripple, D015-1157, D020-1793)

Figure A2.5 Preferred Area: Ryall East

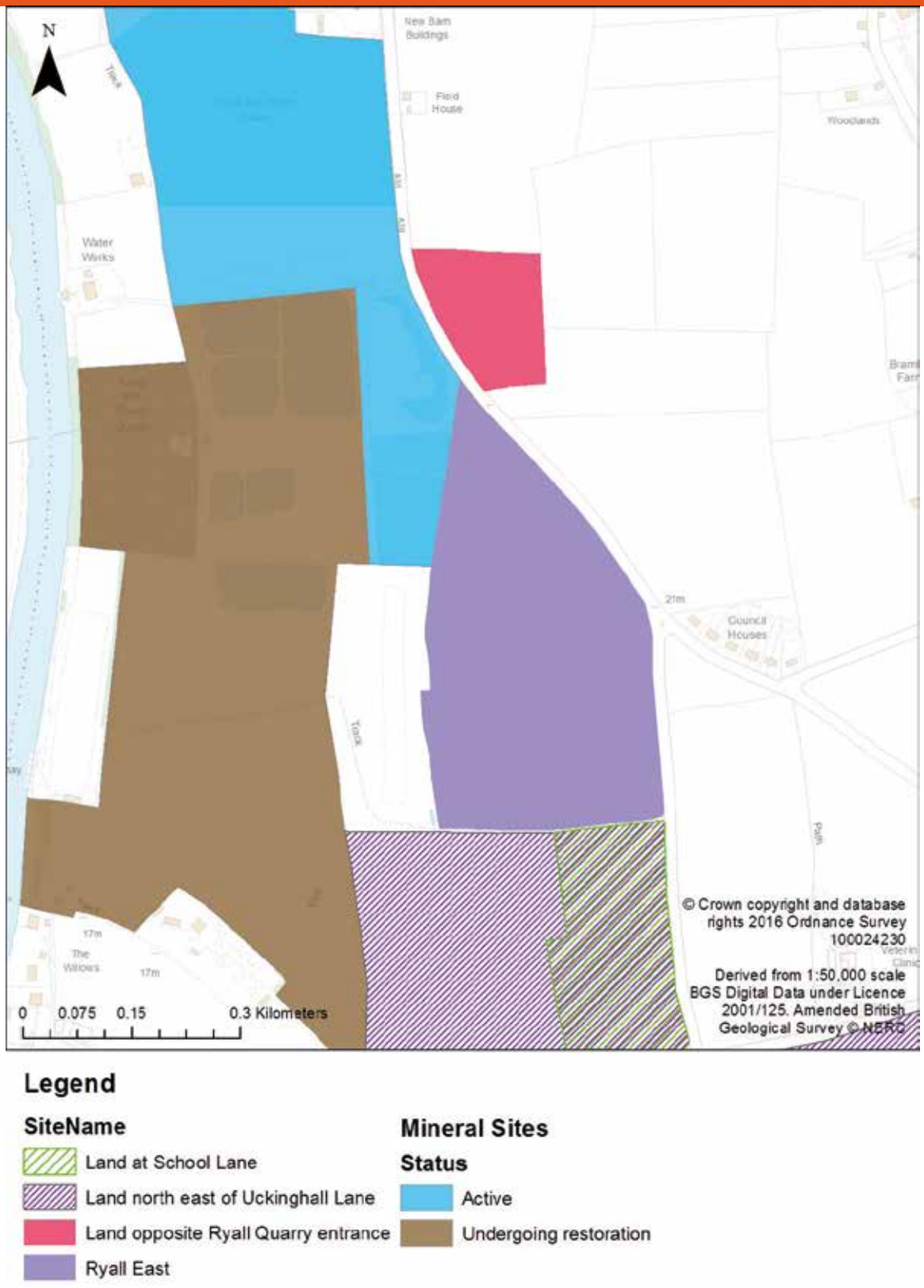


Table A2.21. Ryall East: Site information and context

Site information and context	
Grid Reference	387048, 239385
Approximate site size	15ha
Proposer's aspirations for after-use of the site	Agriculture, possibly at lower level.
Resource area reference in Analysis of Mineral Resources in Worcestershire[21]	The site overlies part of resource area 19/1.
Minerals history	Sand and gravel was worked at Saxon Lode site (Planning permission reference number 407421, undergoing restoration). Sand and Gravel was worked at Ryall House Farm site (Planning permission reference numbers 407225, 407291, 407368, 407407, 407420 and 407418, 407501.
Current land use	Indicated as Grade 1 agricultural land on Provisional Agricultural Land Classification maps. Site visit has confirmed the site to be agriculture (crops).

Table A2.22. Ryall East: Viability

Viability		
Quantity of mineral resource	750000 tonnes (unproven).	A
Mineral operator interest	Operator interest from Cemex (confirmed).	G
Landowner support	Proposed on behalf of Worcester Diocesan Board of Finance Limited.	G
Proposer's suggestions for processing options	Existing plant at Ryall House Farm.	G

21 The "Analysis of Mineral Resources in Worcestershire" can be viewed at www.worcestershire.gov.uk/mineralsbackground.

View into the Ryall East Preferred Area

View into the Ryall East Preferred Area

Table A2.23. Ryall East: Whether the submitted site is likely to be acceptable in planning terms

"Proposal is likely to be acceptable in planning terms"		
Strategic Corridor	Lower Severn Strategic Corridor.	G
Highways England	Potential impacts on the A38 and M50 Junction 1. The potential traffic impacts of the identified sites should be assessed on an individual basis, and as appropriate, also a cumulative basis; this is particularly important for the cluster of sites located to the north of the M50 Junction 1, and those sites in close proximity to M5 Junction 4.	G
Worcestershire County Council Highways	County Council officers can advise that the creation of a new access onto A38 to facilitate the movement of material by road is not necessarily an insurmountable matter that couldn't satisfactorily be resolved through a sufficiently detailed planning application. Indeed, the A38 (an advisory HGV route) should provide a suitable means of distribution for the extracted material. Nevertheless, the County Council would need to be satisfied that safe and suitable access would be provided for, incorporating adequate forward and junction visibility splays, sufficient width to accommodate large vehicles, together with suitable bound surfacing and adequate signage along the proposed vehicle route to the site entrance. To assist in any subsequent determination, prospective applicants should also be advised to submit a detailed construction method statement that will show on and off-site operations and proposed mitigation measures.	G
Canal & River Trust	Potentially able to access the river to carry materials by water. Whilst in principle this may be acceptable each application would need to be considered on its own merits with regard to navigational safety and would be dependent on volume, frequency, location of loading and off loading facilities, and movements by other existing users, including other minerals operators, on the stretch of river involved.	G
Avon Navigation Trust	No comments received.	G
Office of Road and Rail	No comment.	G

Table A2.24. Ryall East: Deliverability assessment result

Overall deliverability assessment score[22]	A

22 Comprised of the lowest RAG rating given in any of the above categories. See Worcestershire County Council, 2016, Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.

Table A2.25. Ryall East: Site informatives

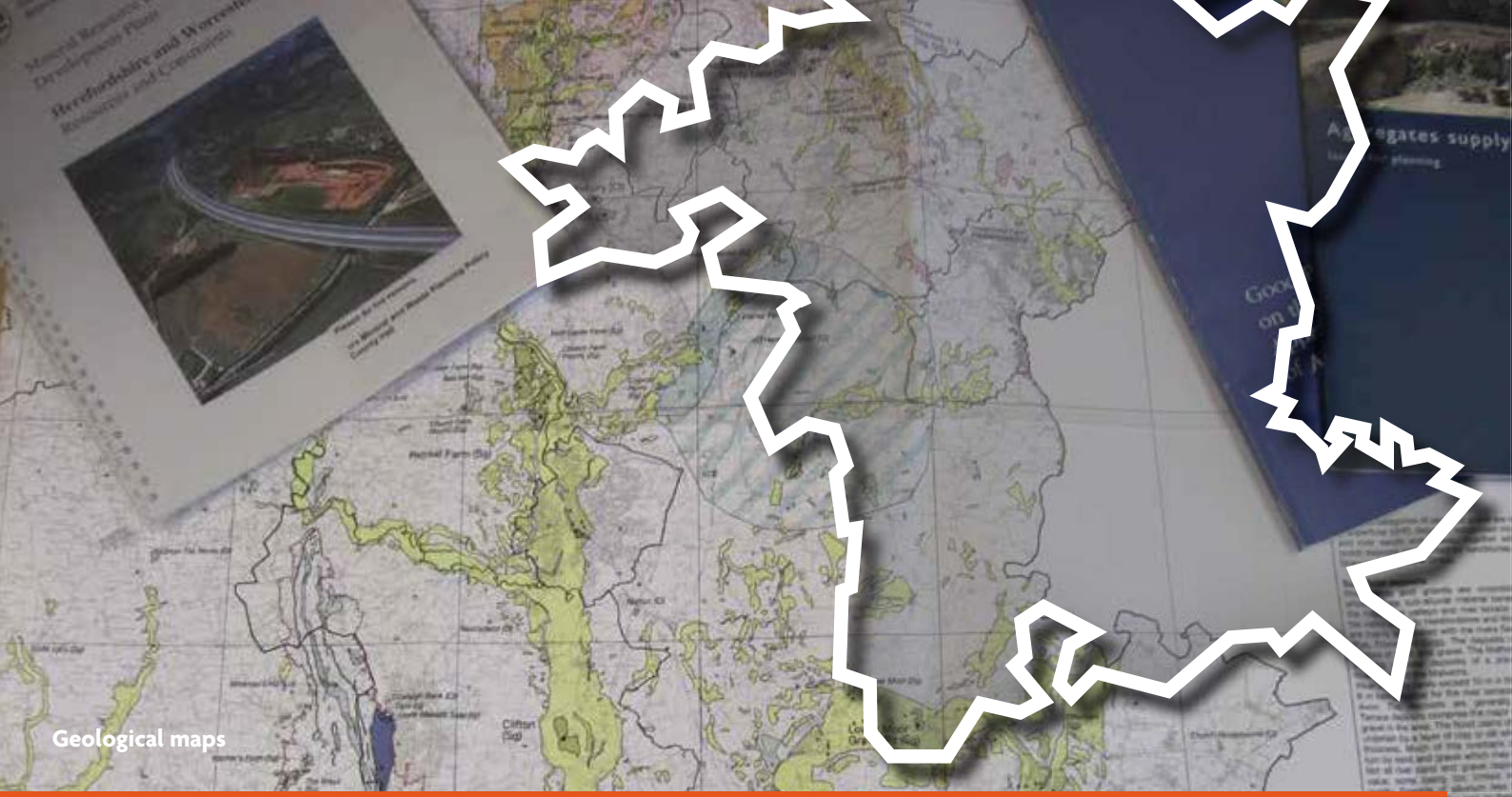
Site informatives		
Consultee	**Consultee comments[23]**	**Addressed by Minerals Local Plan Policy**
Environment		
Environment Agency	River Severn adjacent & a number of OWs [Ordinary Watercourses] transect. Site is within Flood zones 3, 2 and 1 and situated above Secondary A Superficial and Secondary A Bedrock aquifers. This site is not within a source protection zone. Is close to a SSSI. Key constraints are SSSI, Pollution Control, Water Framework Directive, and Flood Risk. Key betterment opportunities are Water Framework Directive and Flood Risk.	Policy MLP 22
Historic England	Site is located in between a number of Grade II listed buildings as well as South of the Upton on Severn Conservation Area and North of the Uckinghall Conservation Area. Any potential development would need to consider the impact on these heritage assets and ensure that their significance is protected and conserved.	Policy MLP 23
Lead Local Flood Authority	No watercourses on site or surrounding the site. River Severn is to the west and has a moderate ecological status and a good chemical status. The updated Flood Map for Surface Water shows a few small splodges of 1 in 1000 which are not too much of a concern. There are no flood spots on site.	Policy MLP 22
Natural England	Approximately 650m from Upton Ham. However upstream and on opposite site of river so no anticipated issues. Adjacent to the River Severn.	Policy MLP 18 and Policy MLP 22
Worcestershire Regulatory Services	No concerns over contaminated land. Relevant exposure within 200m (nearest ~12m) - impact assessment may be required to consider potential impact of PM [particulate matter] on nearby residential properties and assessment of potential impact of vehicle movements on relevant AQMAs [Air Quality Management Areas] and areas of air quality concern. Advise that as part of any planning process a noise and dust impact assessment is carried out if any of these sites are considered suitable in the future.	Policy MLP 16

23 The comments from consultees are quoted verbatim.

View into the Ryall East Preferred Area

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Environment		
Worcestershire Archive & Archaeology Service	The PDA is located in a landscape that contains a variety of heritage assets of archaeological interest. Within the PDA itself a possible later Prehistoric or Roman trackway is visible as cropmarks on aerial photographs (WSM01328). Alternatively, the ditches could mark the line of a pipeline associated with the adjacent World War II RAF Aviation Fuel and Oil Reserve Depot (WSM42790). Although a field evaluation undertaken in advance of mineral extraction on land to the north of the PDA did not reveal any significant archaeological remains the general potential of the area for the discovery of additional, as yet unknown heritage assets of archaeological interest is indicated by the presence of an extensive probable Iron Age and/or Roman settlement site visible as cropmarks on aerial photographs on land approximately 250m to the northeast of the PDA (WSM34941). The PDA is located in an area of Palaeolithic Potential, situated on the Holt Heath sand and gravel member. Interbedded organic beds occur within the Holt Heath gravels elsewhere, particularly noteworthy being Upton Warren where Devensian faunal and palaeoenvironmental remains have been recovered. Fauna including Hippopotamus have also been found at the base of the Holt Heath beds in the Stour Valley. In line with the National Planning Policy Framework (NPPF, DCLG, 2012), the applicant should be required to produce a heritage statement describing the significance of any heritage assets affected by the proposed development, including any contribution made by their setting. The level of detail should be proportionate to the importance of the asset and no more than is sufficient to understand the potential impact of the proposal on their significance. The heritage statement should accompany any forthcoming planning application and include an assessment of the impact of the development on the setting of any designated heritage assets in the vicinity of the PDA. The heritage statement should also incorporate the results of a field evaluation, which will provide information on the presence or absence, extent, date and local, regional or national significance of any archaeological remains, including palaeoenvironmental deposits, within the PDA. The evaluation should include a geoarchaeological assessment of the underlying strata in areas of Palaeolithic Potential. In the event that planning consent is granted then, in accordance with Paragraph 141 of the NPPF, where archaeological remains are found to be present within the PDA that cannot be preserved in-situ then further archaeological works would be required to mitigate the impact of the development on the threatened remains. These works should be secured by means of a suite of suitably worded conditions attached to any grant of permission for the scheme.	Policy MLP 23
Health		
Clinical Commissioning Groups	No comments received.	Policy MLP 16
NHS England	No comments received.	Policy MLP 16
Planning		
City, Borough or District Council	No overlap with proposed allocations in the South Worcestershire Development Plan. Malvern Hills District Council noted the following key planning concerns • 60m from a row of 12 Council Houses • >60% likelihood Best & Most Versatile (BMV) land	Policy MLP 16 and Policy MLP 20

Site informatives *(continued)*		
Consultee	**Consultee comments**	**Addressed by Minerals Local Plan Policy**
Utilities		
CLH	We can confirm that our client's apparatus, the CLH Pipeline System – Energy Act 2013 (CLH PS), may be affected by your proposals. You should note that the interests of the CLH Pipeline System are conserved by means of the Energy Act 2013, in particular Part IV of the Act, and other legislation such as the Pipeline Safety Regulations 1996. It is, however, the Energy Act 2013 that prohibits any development and most intrusive activities within the Easement Strip without specific consent from CLH Pipeline System. CLH Pipeline System Easement Strips are 6 metres wide and can incorporate other associated CLH Pipeline System facilities.	Policy MLP 15
National Grid	No comment.	Policy MLP 15
Western Power	No comments received.	Policy MLP 15
Water Undertakers	**Severn Trent**: We have no objection to the consideration of Ripple East as a Specific Site.	Policy MLP 15 and Policy MLP 22



Geological maps

Appendix 3: Definition of the strategic corridor boundaries

In order to identify **strategic corridors** where gains can be maximised, the distribution of mineral resources was considered alongside the potential for mineral development to positively impact on green infrastructure at a landscape-scale (see **Chapter 3**). Development within the **strategic corridors** is more likely to contribute to meaningful delivery of green infrastructure than development outside the corridors as it will enable the achievement of benefits across multiple sites that are greater than could be achieved by considering each site in isolation.

The precise definition of the strategic corridors was influenced by the components of green infrastructure:

- **Landscape:** In Worcestershire, there is a strong relationship between the location of mineral resources and the character of landscapes where they are found. Landscape is a visual manifestation of the inter-relationship between man's activities and the natural environment and is contributed to by the underlying geology and a variety of green infrastructure components. Landscape character can be objectively assessed and in Worcestershire the *Landscape Character Assessment*[1] has undertaken this assessment for the entire county. The assessment identifies the landscape character types for individual parcels of land, establishing precise boundaries where the landscape character changes.

  Due to the ability of landscape character to encompass many aspects of green infrastructure and the benefit of precise boundaries established through the *Landscape Character Assessment*, landscape character was the predominant factor used to identify cohesive clusters of resources and to identify the precise boundaries of the strategic corridors.

  This approach does not take account of the condition of the landscape or identify one landscape type as more able or less able to accommodate mineral development than another, but it is a useful indicator of cohesion within corridors and provides a framework within which to set priorities for each of the **strategic corridors**. Some **strategic corridors** include multiple landscape types. Where this is the case the relationships between these landscape types has informed **Policies MLP 2** to **MLP 6**.

1 See www.worcestershire.gov.uk/lca for more details.

- **Biodiversity:** There is a strong coherence between landscape character and the types of habitats that exist within them. The hedgerows, streams and other features that contribute towards landscape character also contribute towards habitat networks and the movement of species. The consideration of landscape character in defining the boundaries of the **strategic corridors** is therefore considered an appropriate mechanism for identifying landscape-scale coherence in relation to biodiversity. The ecological zones identified in *Biodiversity and mineral sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*,[2] the patterns of BAP priority habitats identified in the *Worcestershire Habitat Inventory*[3] and the *Biodiversity Delivery Areas*[4] identified by the Local Nature Partnership have been used to verify the validity of this approach.

  This approach does not take account of the condition of existing habitats as this is more meaningful on a site-by-site basis than on a corridor scale. However the distribution of high value habitats such as SSSIs, Local Wildlife Sites and BAP habitats has been considered alongside the ecological zones and Biodiversity Delivery Areas to inform the priorities set for each corridor.

- **Agriculture and soils:** There is significant overlap between mineral resources and the distribution of Best and Most Versatile Agricultural Land. Local agricultural practices influence landscape character; as such using landscape character to inform the boundaries of the **strategic corridors** is a useful way of taking agriculture into account. It allows the predominant land-use to be considered, identifying patterns of arable use, horticulture, grazing or mixed agriculture and opportunities to integrate other green infrastructure benefits. Patterns of land-use are more appropriate for identifying coherence at a landscape-scale than the distribution of Best and Most Versatile Agricultural Land alone. The distribution of Best and Most Versatile Agricultural Land has informed the priorities for each **strategic corridor** and it is protected through **Policy MLP 20**.

- **Water environment:** It can be useful to consider the water environment based on river catchments. Catchments are large areas and aren't considered a meaningful basis on their own to facilitate the integration of other green infrastructure components, however they have informed the definition of the **strategic corridors**. The boundaries of the **Lower Severn Strategic Corridor** and **Salwarpe Tributaries Strategic Corridor** are partly defined by the catchment areas identified in the *River Severn Catchment Flood Management Plan*.[5]

- **Geodiversity:** Geodiversity has not been used to identify the boundaries of the **strategic corridors**. Although the occurrence of features of geodiversity interest is dependent on the underlying geology, the distribution of designated features does not show a strong geographic pattern of distribution, with the exception of the Abberley and Malvern Hills Geopark and the Malvern Hills and Cotswolds Areas of Outstanding Natural Beauty where there are clusters of designated and non-designated features of geodiversity interest.

- **Historic environment:** The historic environment is formed of many different features and their setting, and this is often best considered on a local-scale; however there is a strong relationship between landscape and the historic environment with landscape influencing historic land-uses and these land-uses and features then influencing the landscape character.

  Defining the boundaries of the **strategic corridors** based on landscape character is therefore considered an appropriate mechanism for addressing the historic environment at a landscape scale. *Worcestershire's Historic Landscape Characterisation*[6] has been used to verify the validity of this approach but has not directly informed the boundaries of the **strategic corridors**. Other data was considered in

2 Worcestershire County Council (2013) available at www.worcestershire.gov.uk/mineralsbackground.
3 Worcestershire County Council (2013) available at www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.
4 Biodiversity Delivery Areas are used by the Local Nature Partnership and Biodiversity Action Plan Partnership. These can be viewed at www.worcestershire.gov.uk/info/20252/environmental_policy/1155/biodiversity_action_plan/2 and on the interactive minerals mapping tool at www.worcestershire.gov.uk/minerals.
5 Environment Agency (2009) https://www.gov.uk/government/publications/river-severn-catchment-flood-management-plan.
6 Worcestershire Historic Environment Record and Worcestershire County Council (2012) available at www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1062/historic_landscape_characterisation_hlc.

relation to the historic environment, including distribution of designated and non-designated assets. This was not considered meaningful at a landscape-scale due to the variation in type, age and importance of assets across wider areas and the fact that a lack of recorded assets in an area does not necessarily mean that assets are not present.

- **Access and recreation:** Access and recreation has not been used to identify the boundaries of the **strategic corridors**. However patterns of access and recreation are closely associated with specific landscape types, as the patterns of land-use and enclosure influence the extent of public access networks. This further supports the use of landscape character as the primary mechanism for identifying the boundaries of the **strategic corridors**.

The **strategic corridors** do not include all known mineral resources in the county, but seek to reflect a 'best fit' of where mineral development and the potential for green infrastructure enhancement overlap and can best work together.

Some mineral resources in close proximity to the **strategic corridors** have been excluded because, being in different landscape types, they do not have significant potential to contribute towards a cohesive and coordinated approach at a landscape-scale. While individual sites might be able to deliver on-site green infrastructure benefits in isolation, much greater gains can be delivered from a network approach. Sites that are close by but in a different landscape type are unlikely to contribute towards the habitat network for that corridor or have the same priorities in terms of landscape character or the water environment.

Appendix 4: Glossary

Active site	For the purpose of the Minerals Local Plan active mineral sites are sites with planning permission for mineral working, where development has commenced and working is ongoing or has not formally ceased. In some cases phased restoration may take place concurrently to mineral working.
Aftercare	The operations necessary to maintain restored land in a condition necessary for an agreed after-use to continue.
After-use	The use that land previously used for mineral working is put to after restoration.
Aged or veteran tree	A tree which, because of its great age, size or condition is of exceptional value for wildlife, in the landscape or culturally.
Aggregates	Granular materials (sand, gravel, crushed rock and other bulk materials) used by the construction industry. Aggregates can be land-won, marine, secondary or recycled. There are three main types of primary aggregate minerals: sand, gravel, and crushed rock. Substitute, secondary and recycled materials and minerals waste can also contribute to the sustainable supply of aggregate minerals. Aggregates can be end products in themselves, but are also used as a raw material in the manufacture of construction products such as concrete, asphalt, lime and mortar.
Aggregates Working Party (AWP)	A group comprising representatives of mineral planning authorities, the minerals industry and other relevant organisations within each region. An AWP oversees aggregates data collection and produces an annual report for its area, and advises on the Local Aggregate Assessments produced by its member Mineral Planning Authorities.
Agricultural Land Classification (ALC)	The Agricultural Land Classification provides a framework for classifying land according to the extent to which it's physical or chemical characteristics affect the range of crops which can be grown, the level of yield, the consistency of yield and the cost of obtaining it. It classifies agricultural land in to five categories. The top three grades, Grade 1, 2 and 3a, are referred to as 'Best and Most Versatile' land.

Air overpressure	Blasting operations are used in extracting some types of rock. Air overpressure is energy transmitted from a blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this wave is known as the peak air overpressure, generally measured in decibels linear (dB).
Amenity	Elements that contribute to the overall character or enjoyment of an area, including visual and aural aspects, open land, trees, historic buildings and the inter-relationship between them, or less tangible factors such as tranquillity.
Ancillary	An activity that provides necessary support to the operation of a development or can only be undertaken alongside the primary purpose of the development.
Area of Outstanding Natural Beauty (AONB)	An area with statutory national landscape designation, the primary purpose of which is to conserve and enhance natural beauty.
Bedrock geology	Bedrock geology (formerly known as 'solid' geology by British Geological Survey) is a term used for the main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.
Best and Most Versatile Agricultural Land	Best and most versatile agricultural land is defined in the National Planning Policy Framework as land in grades 1, 2 and 3a of the Agricultural Land Classification (see also *Agricultural Land Classification*).
Biodiversity offsetting	Biodiversity offsets are conservation activities that are designed to give biodiversity benefits to compensate for losses when damage cannot be avoided or mitigated. **https://www.gov.uk/government/collections/biodiversity-offsetting**
Borrow pits	A temporary mineral working to supply material for a specific construction project.
Breccias	Clastic sedimentary rocks that are composed of large angular fragments (over two millimeters in diameter). The spaces between the large angular fragments can be filled with a matrix of smaller particles or a mineral cement that binds the rock together.
British Geological Survey (BGS)	A public sector organisation responsible for advising the UK Government on geological matters and providing geological advice to industry, local government, academia and the public.
Building stone	Building stones are naturally occurring rocks of igneous, sedimentary or metamorphic origin which are sufficiently consolidated to enable them to be cut or shaped into blocks or slabs for use as walling, paving or roofing materials in the construction of buildings and other structures.
Bund	An artificial embankment used to screen mineral development or to contain tipped or stored materials.
Campaign working	Where mineral working takes place intermittently but intensively. It often involves stockpiling materials.
Carbonaceous material	Material consisting of, or containing, carbon.
Clastic	Rocks composed of broken pieces of older rocks.

Common bricks	Common bricks are sufficiently hard to safely carry the loads normally supported by brickwork, but because they have a dull texture or poor colour they are not in demand for use as facing bricks which show on the outside when built and affect the appearance of buildings.
Crushed rock	Limestone, sandstone and igneous rocks which can be mechanically broken for use as aggregates by the construction industry.
Development Plan	The set of planning policies covering a particular area included in one or more Local Plans and Neighbourhood Plans. Within two-tier areas, the Development Plan includes policies adopted by the district and county councils.
Dewatering	When water is pumped out of a quarry void to allow dry working below the water table.
Dimension stone	Natural stone or rock that has been selected and finished (trimmed, cut, drilled, ground, or other) to specific sizes or shapes.
Droitwich Halite Member	The Droitwich Halite Member is a form of rock salt. See the British Geological Survey's Lexicon of Named Rock Units for more detailed geological information **http://www.bgs.ac.uk/lexicon/lexicon.cfm?pub=DHT**.
Ecosystem services	The benefits that people obtain from ecosystems, comprising supporting, provisioning, regulating and cultural services.
Energy minerals	Minerals with a carbon content which enables them to be combusted to release their stored chemical energy in the form of heat (includes coal, oil and gas).
Enforcement	Procedures by a Local Planning Authority to ensure that the terms and conditions of a planning decision are carried out, or that development carried out without planning permission is brought under control.
Environmental Impact Assessment (EIA)	A procedure to be followed for certain types of project to ensure that decisions are made in full knowledge of any likely significant effects on the environment.
Environmental Statement	A formal stage in the process of environmental impact assessment involving the preparation of a comprehensive study and statement of the likely impact of the proposal on all relevant aspects of the environment, the measures taken to mitigate adverse effects and any alternatives considered.
Exception Test	A method to demonstrate and help ensure that flood risk to people and property will be managed satisfactorily, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.
Existing sites	Operational sites with extant planning permissions.
Exploration	The process of physical investigation to establish the presence, extent and economic viability of a mineral resource.
Extruded products (brick clay)	Extruded products are created by forcing a mixture of clay and water into a die, then cutting the resulting column into shorter units with wires before firing.
Flood Risk Assessment	A site-specific assessment carried out by, or on behalf of, a developer to assess the flood risk to and from a development site.

Fracking	"Fracking", short for "hydraulic fracturing", involves the fracturing of rock using a hydraulically pressurised liquid comprising water, sand and chemicals that is injected into drilled wells to create cracks through which oil or gas in the bedrock can flow.
Geodiversity	The variety of earth materials, forms and processes that constitute and shape the Earth, either the whole or a specific part of it. These include rocks, minerals, soils and landforms.
Green infrastructure	A network of high quality green and blue spaces and other environmental features that acts as a multifunctional resource capable of delivering a wide range of environmental and quality of life benefits (ecosystem services) for local communities.
Groundwater	Water associated with soil or rocks below the ground surface, usually taken to mean water in the saturated zone.
Geopark	A Geopark is a unified area with geological heritage of international significance. The Abberley and Malvern Hills Geopark covers parts of the four counties of Gloucestershire, Herefordshire, Shropshire and Worcestershire. The Geopark exists to promote excellence in geoconservation and to make a contribution to local economies through sustainable geotourism (**http://geopark.org.uk/pub/**). The Cotswold Hills Geopark stretches between Stroud, Cirencester and Stow-on-the-Wold, crossing into the south-east corner of Worcestershire around the village of Broadway. The Cotswold Hills Geopark aims to win recognition for the area as one of outstanding geodiversity which has strongly influenced the history and heritage of the area (**http://www.cotswoldhillsgeopark.net/geopark.html**).
Glacial deposits	Sediment deposited by a glacier.
Glaciofluvial processes	Processes associated with glacially fed rivers and streams, and the deposits and landforms created by them.
Habitats Regulations Assessment (HRA)	The assessment process undertaken to consider whether a plan or project is likely to have a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects.
Heritage asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage assets include designated assets and assets identified by the local planning authority (including local listing).
Historic environment	The historic environment is all designated and non-designated features of historic, architectural, archaeological or artistic interest. This includes World Heritage Sites, listed buildings, conservation areas, historic parks and gardens, and scheduled monuments and assets listed in the Historic Environment Record. It also includes their settings; the wider urban and rural landscape and the potential for unrecorded archaeology. It is important to consider historic landscapes and townscapes as a whole to understand what gives an area its sense of place and identity.
Horticulture	The branch of agriculture that deals with the art, science, technology, and business of growing plants. It includes the cultivation of medicinal plants, fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, seaweeds and non-food crops such as grass, ornamental trees and plants.
Hydrocarbon	An organic compound comprising hydrogen and carbon and including gases, oils and other liquids and low melting solids, and primarily used as an energy source.
Incinerator Bottom Ash (IBA)	A form of ash produced in incineration facilities.

Industrial minerals	Minerals which are necessary to support industrial and manufacturing processes and other non-aggregate uses. These include minerals of recognised national importance including: brick clay and silica sand.
Informal access and recreation	Includes walking and cycle routes, country parks and free to use recreation sites.
Kidderminster Formation	The Kidderminster Formation is a 0 - 200m thick sequence of conglomerates and sandstones previously known as either the Bunter Pebble Beds or the Kidderminster Conglomerate Formation.
Landbank	In aggregate planning the term "landbank" is used to refer to the stock of reserves of minerals with planning permission for extraction within a particular area; it can be used as a tool to assess how long supply can be maintained for based on forecasted level of demand. It is expressed in years, based on the amount of remaining reserve divided by the amount expected to be produced and sold each year.
Landscape-scale	A term commonly used to refer to considerations across a large spatial scale, taking a holistic approach to the consideration of economic, social and environmental considerations.
Legibility	The way in which features and characteristics in the landscape interact to strengthen character and show how they have emerged.
Local Aggregate Assessment (LAA)	An assessment, prepared annually, of the demand for and supply of aggregates in a mineral planning authority's area. A Local Aggregates Assessment should include a forecast of aggregates demand, analysis of all supply options, and an assessment of the balance between demand and supply.
Locally and nationally important minerals	The National Planning Policy Framework[1] defines minerals of local and national importance as: "Minerals which are necessary to meet society's needs, including aggregates, brickclay (especially Etruria Marl and fireclay), silica sand (including high grade silica sands), cement raw materials, gypsum, salt, fluorspar, shallow and deep-mined coal, oil and gas (including hydrocarbons), tungsten, kaolin, ball clay, potash and local minerals of importance to heritage assets and local distinctiveness".
Malverns Complex	The oldest rocks found in the county. The precambrian Malverns Complex outcrops in a continuous north-south linear fashion from End Hill Quarry in the north, to Chase End Hill in the south. Inliers of the Complex occur north of the main outcrop at Cowleigh Roadside and in an infilled pit just south of Martley.
Mineral Consultation Areas	An area identified in order to ensure consultation between the relevant Local Planning Authority, the minerals industry and the Mineral Planning Authority before certain non-mineral planning applications are determined.
Mineral resources	Mineral resources that are, or have the potential to be, viable to work and produce sufficient revenue to cover operating costs and produce a return on capital. In the Worcestershire Minerals Local Plan this is based on the 2016 *Analysis of Mineral Resources in Worcestershire*.
Mineral development	The winning and working of minerals, including site preparation, extraction, tipping of mineral waste, ancillary operations such as the installation and use of processing plant, and the restoration and aftercare of the site.
Mineral operator	The company or individual undertaking mineral development at one or more mineral sites.
Mineral Planning Authority (MPA)	The Local Authority which is responsible for preparing and adopting the mineral planning policy framework for an area, in this case Worcestershire County Council.

16 Department for Communities and Local Government (March 2012) *National Planning Policy Framework*.

Mineral reserve	Sites where planning permission has been granted for development but where extraction has still to take place or is not yet completed. It may cover the whole or part of a site.
Mineral Safeguarding Areas	An area designated by a Mineral Planning Authority which covers known deposits of minerals and any supporting infrastructure that are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.
Mitigation	The reduction in the significance of impacts on sensitive receptors through a range of potential measures in planning policies and conditions on permissions.
Nationally important minerals	See "Locally and nationally important minerals".
Natura 2000 sites	A network of nature protection areas in the European Union made up of Special Areas of Conservation (SACs) designated under the EU Habitats Directive and Special Protection Areas (SPAs) designated under the EU Birds Directive.
Neighbourhood Plan	A plan prepared by a Parish Council or Neighbourhood Forum for a particular neighbourhood area and which, if adopted following a local referendum, forms part of the Development Plan.
Nitrate Vulnerable Zones	Areas designated as being at risk from agricultural nitrate pollution.
Odour	Defra (2010) *Odour Guidance for Local Authorities* (**https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69305/pb13554-local-auth-guidance-100326.pdf**) defines an odour as the organoleptic attribute perceptible by the olfactory organ on sniffing certain volatile substances. It is a property of odorous substances that make them perceptible to our sense of smell. The term odour refers to the stimuli from a chemical compound that is volatilised in air. Odour is our perception of that sensation and we interpret what the odour means. Odours may be perceived as pleasant or unpleasant. The main concern with odour is its ability to cause a response in individuals that is considered to be objectionable or offensive.
Offsetting	See "Biodiversity offsetting".
Oolitiic Limestone	A carbonate rock made up mostly of ooliths which are sand-sized carbonate particles that have concentric rings of CaCO3. These rings are formed around grains of sand or shell fragments that were rolled around on the shallow sea floor, gathering layer after layer of limestone.
Outfarm	A multi-purpose farm building in an outlaying area of a farm.
Overburden	Soil and other material that overlays a mineral deposit which has to be excavated and either tipped or stockpiled for use in restoration to gain access to the underlying mineral. The distinction between mineral resource and overburden is not always distinct, and some overburden may contain material capable of processing for mineral use.
Permitted reserves	Mineral reserves that have the benefit of planning permission for extraction.
Productive capacity	The capacity to produce, process and sell minerals. Productive capacity at an individual site can be impacted indirectly through planning conditions which limit the operation of a site, such as limiting opening hours or the number of vehicle movements, or could be limited by the throughput of the site's processing plant. The county's overall productive capacity is a function of the number of active sites and their individual productive capacity. If there are too few sites, the overall security of Worcestershire's productive capacity could be put at risk by commercial decisions or natural events at any individual site.

"Prospective" for coalbed methane	Meaning thought to contain a viable resource of coalbed methane.
Pulverised Fuel Ash (PFA)	A waste product of pulverised fuel (typically coal) fired power stations.
Quartzite	An extremely compact, hard, granular rock consisting essentially of quartz.
Restoration	The return of land to an acceptable condition, following mineral extraction, either for resumption of the former land use or for a new use.
Recycled aggregates	For the purposes of the Worcestershire Minerals Local Plan this means aggregates produced from the recycling, through crushing and screening, of inorganic construction, demolition and excavation wastes.
Reclamation	Operations associated with the winning and working of minerals designed to return the area to an acceptable environmental condition, whether for the resumption of the former land use or for a new use. As well as restoration and aftercare, it includes events which take place before and during mineral extraction, such as soil handling, and operations after extraction such as filling and contouring or the creation of planned water areas.
Safeguarding	The protection of mineral resources, and the infrastructure for their transportation and processing, from sterilisation by other forms of development.
Secondary aggregates	Aggregates derived from the extraction and processing of non-aggregate minerals or as a by-product of industrial processes.
Sensitive receptors	Sensitive receptors include people in their homes, schools, places of work and recreation; businesses, including agriculture and tourism; environmental receptors such as wildlife, habitats, geological features and heritage assets; and other users of land, including farm animals.
Site of Special Scientific Interest (SSSI)	A site designated by Natural England under the Wildlife and Countryside Act 1981 as an area of special interest by reason of any of its flora, fauna, geological or physiographical features (plants, animals and natural features relating to the Earth's structure).
Source Protection Zones	Source Protection Zones (SPZs) are defined for groundwater sources such as wells, boreholes and springs used for public drinking water supply. They show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. There are three main zones identified (inner, outer and total catchment).
Special Area of Conservation (SAC)	An area given special protection under the European Union's Habitats Directive for its habitat and/or species.
Specific site	An area where viable resources are known to exist, landowners are supportive of minerals development and the proposal is likely to be acceptable in planning terms. Such sites may also include essential operations associated with mineral extraction.
Statement of Community Involvement (SCI)	A document within the Minerals and Waste Development Framework which sets out how the community and stakeholders will be involved and consulted during the preparation of the Waste and Minerals Local Plans and the determination of planning applications.
Sterilisation	A change of use or other development of land that prevents future mineral exploitation.

Strategic Flood Risk Assessment (SFRA)	A study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future, taking account of the impacts of climate change, and to assess the impact that land use changes and development in the area will have on flood risk.
Superficial sand and gravel deposits	Superficial deposits refer to geological deposits typically of less than 2.6 million years old. These recent unconsolidated sediments may include stream channel and floodplain deposits.
Supplementary Planning Document (SPD)	A document which adds further detail to the policies in the Local Plan. It can be used to provide further guidance for development on specific sites, or on particular issues, such as design. Supplementary planning documents are capable of being a material consideration in planning decisions but are not part of the development plan.
Sustainability Appraisal	The process of appraising the sustainability of a policy document (including the Minerals Local Plan) against a series of set sustainability objectives. Sustainability Appraisal should be undertaken throughout the development of a policy document in order that it can be refined in light of appraisal results, and should incorporate the requirements of the EU's Strategic Environmental Assessment Directive.
Sustainable drainage system (SuDS)	A surface water drainage system that attempts to replicate natural systems by allowing surface water to be collected, stored and cleaned before it is released slowly back into water courses or groundwater.
Triassic period	The first period of the Mesozoic Era, occurring between 251million and 199million years ago.
Tufa	A porous rock composed of calcium carbonate and formed by precipitation from water, for example around mineral springs.
Vernacular	Architecture concerned with domestic and functional rather than public or monumental buildings.
Vitrified clay pipes	Pipes made from a blend of clay and shale that has been subjected to high temperature to achieve vitrification, a process which results in a hard, inert ceramic.
Water environment	All aquatic features and the surroundings associated with controlled waters which includes surface water rivers, canals, lakes, estuaries and coastal waters, and groundwater.
Water table	The level below which the ground is saturated by water, which will fluctuate seasonally.
West Midlands Conurbation	The West Midlands Conurbation is made up of seven metropolitan councils (Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall and Wolverhampton).
Wharfage	Provision at a wharf for the loading, unloading, or storage of goods.
Wildmoor Formation	The Wildmoor Sandstone Formation (named from the Worcestershire locality of Wildmoor, north of Bromsgrove) is a 0 - 284m thick sequence of sandstones formerly known as the Upper Mottled Sandstone or Wildmoor Beds. It also includes some mudstones and siltstones.
Winning	Preparation of land to make a mineral available or accessible to be removed.
Working	Removal of a mineral from its position in or under the land.

ALC	Agricultural Land Classification
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
SAC	Special Area of Conservation

Tpa	Tonnes per annum
Mt	Million tonnes
Mtpa	Million tonnes per annum
MW	Mega Watts

Explanation of formations – Lexicon of named rock units - **http://www.bgs.ac.uk/lexicon/home.html**

Geology dictionary - **http://geology.com/geology-dictionary.shtml**

Annex 1: Sites and corridors which have not been included in the Third Stage Consultation draft of the Minerals Local Plan

Submitted sites

The key diagram for the Worcestershire Minerals Local Plan in **Chapter 4** shows those sites which have been allocated as **specific sites** and **preferred areas** and therefore form part of the **spatial strategy**.

The map in this annex shows the location of all 30 sites which were submitted for consideration by landowners, mineral operators and agents. These can also be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals and details about all sites are set out in the *Deliverability Assessment*.[1]

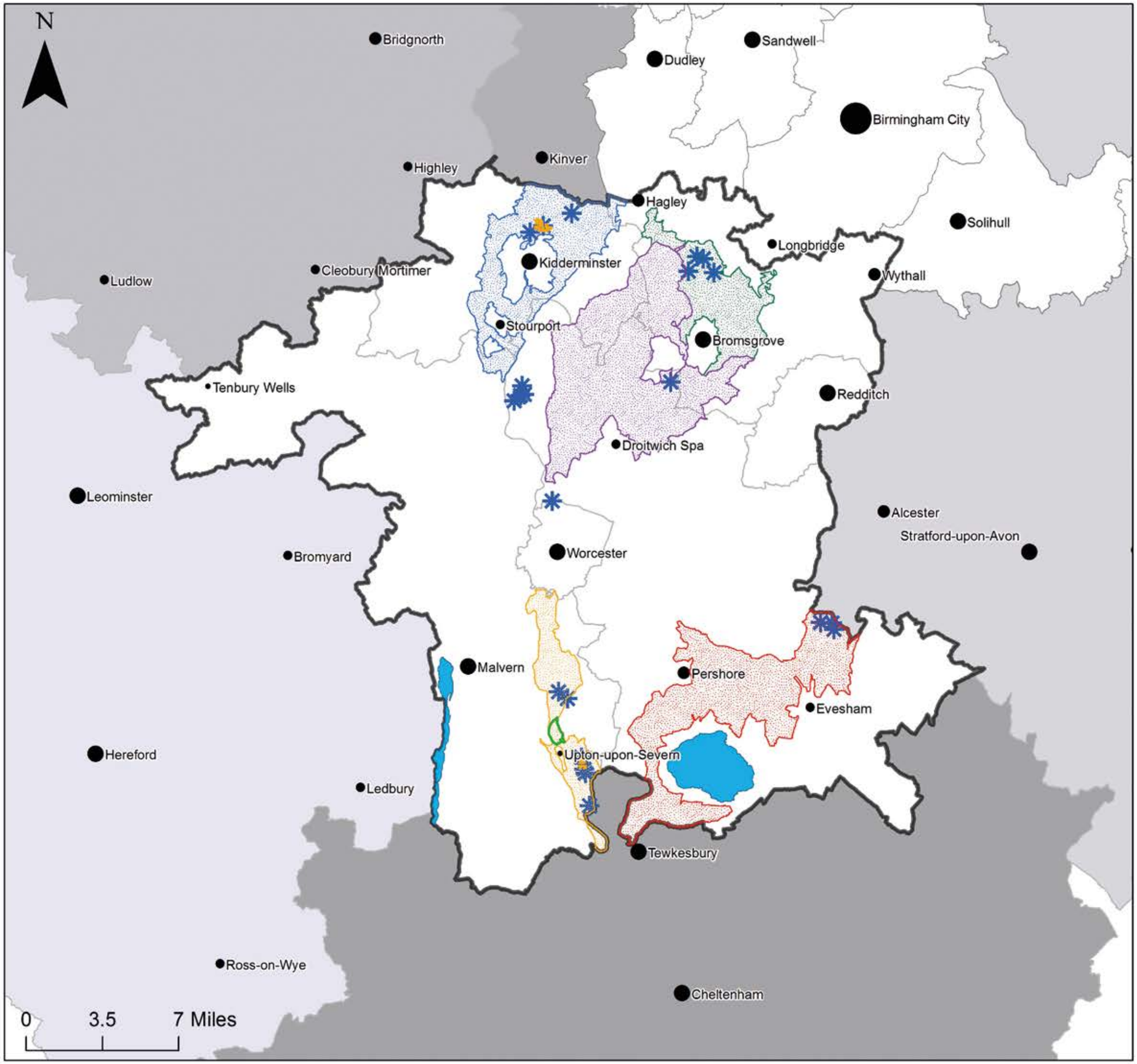
Corridors

The key diagram for the Worcestershire Minerals Local Plan in **Chapter 4** shows the areas which have been allocated as **strategic corridors** and therefore form part of the **spatial strategy**.

The map in this annex also shows the two possible corridors containing crushed rock resources which were identified around the Malvern Hills and Bredon Hill which have not been allocated as **strategic corridors** due to the constraints on Worcestershire's crushed rock resources which indicate that they would be unlikely to be deliverable.

1 Worcestershire County Council, 2016, *Minerals Local Plan Background Document: Call for Sites – Deliverability Assessment* for more information about all the sites considered in the development of the Minerals Local Plan, www.worcestershire.gov.uk/mineralsbackground.

Annex 1 Map: showing sites and corridors which do not form part of the spatial strategy alongside those which do.



Legend

Strategic Corridors

- Avon and Carrant Brook Strategic Corridor
- Lower Severn Strategic Corridor
- North-east Worcestershire Strategic Corridor
- North-west Worcestershire Strategic Corridor
- Salwarpe Tributaries Strategic Corridor

Allocated Sites

- Specific Site
- Preferred Area

Corridors identified but not deliverable

- Corridors identified but not deliverable

Sites submitted for consideration

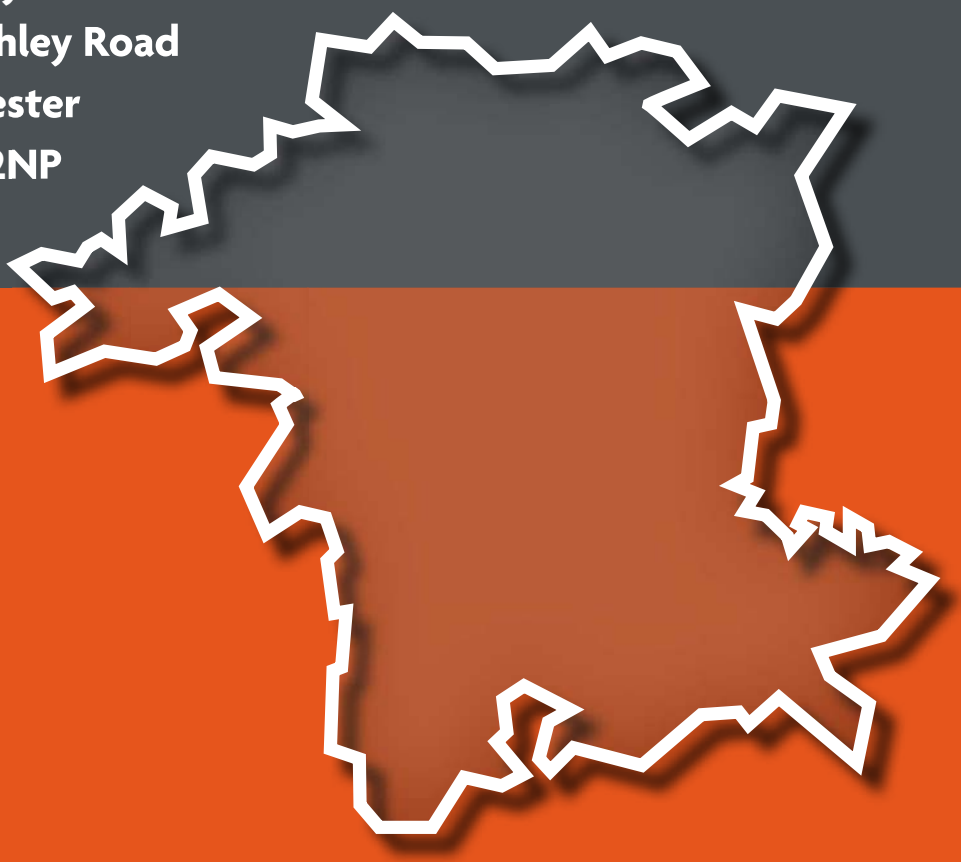
- Sites submitted for consideration

Please contact us if you need this document in another format, or if you have any questions.

Phone: **01905 766374**

Email: **minerals@worcestershire.gov.uk**

Write to: **FREEPOST RTHC-XXCK-AJGY**
Minerals and Waste Planning Policy
Worcestershire County Council
County Hall
Spetchley Road
Worcester
WR5 2NP



Find out more online:
www.worcestershire.gov.uk/minerals

worcestershire county council