



Worcestershire
Minerals Local Plan

Publication Version

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Aggregate use in road construction (Newtown Road, Worcester)

1. Introduction

- 1.1 Minerals are an essential raw material in our daily lives, contributing £235bn annually to the national economy from mineral extraction, products manufacture and first use markets¹. Minerals enable us to build our houses, schools, hospitals, roads and railway lines. Different types of minerals are used for different things:
- **Aggregate minerals** (sand, gravel and crushed rock) are used without much treatment for building, such as roads and houses. A typical new house uses approximately 60 tonnes of aggregate from the foundations through to the roof tiles².
 - **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 Mineral deposits occur naturally. They are finite resources which, due to variations in geology, are not evenly distributed. In Worcestershire, there are deposits of sand and gravel, some types of rock, brick clay, silica sand, coal, and salt.
- 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 Worcestershire³. The Minerals Local Plan sets out the long-term planning strategy for mineral development in Worcestershire to 2035 and beyond⁴. It seeks to enable sustainable development by balancing economic and social need for minerals against any potential social and environmental harm, and seeks to maximise the potential for social, economic and environmental benefits to be realised.

1 Annual total GVA of mineral extraction, products manufacture and first use markets. Source: *UK Minerals Strategy* (July 2018). The *UK Minerals Strategy* was prepared by the UK minerals and mineral products industry, facilitated by members of the CBI Minerals Group and the Mineral Products Association.

2 British Geological Survey (2008) *The need for indigenous aggregates production in England*, <https://www.bgs.ac.uk/downloads/start.cfm?id=1373>. This does not include any requirements for infrastructure supporting housing development or the significant amount used in maintaining or refurbishing existing housing stock. Estimates of the amount of mineral resource required per house when supporting infrastructure, such as access roads, is taken into account (averaged per house on the development) ranges between 200 tonnes (Mineral Products Association (2016) *The Minerals Products Industry at a Glance*, http://www.mineralproducts.org/documents/Mineral_Products_Industry_At_A_Glance_2016.pdf) and 400 tonnes (British Geological Survey (2008) *The need for indigenous aggregates production in England*, <https://www.bgs.ac.uk/downloads/start.cfm?id=1373>).

3 *Town and Country Planning Act 1990*.

4 This will cover a 15 year period from anticipated adoption, in line with national policy.

- 1.4 The Minerals Local Plan is part of the statutory Development Plan for Worcestershire and applies to the whole of the county. 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. The Minerals Local Plan should be read as a whole and should be considered alongside Local Plans prepared by the City, Borough and District Councils within Worcestershire, the Waste Core Strategy and adopted Neighbourhood Plans as relevant to the site, as well as any other relevant international, national, and local policies.
- 1.5 The Minerals Local Plan will be used by the Mineral Planning Authority to determine applications for mineral development, including proposals for new sites or extensions to existing sites for mineral extraction, processing hubs, storage, stockpiling or transportation of minerals, and proposals to amend planning conditions at existing sites. The City, Borough and District Councils in Worcestershire will also use it to make decisions on planning applications for other types of development to ensure that it will not sterilise mineral resources or supporting infrastructure. Planning applications must be determined in accordance with the Development Plan unless material considerations indicate otherwise.⁵
- 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 This Minerals Local Plan supersedes the previous mineral planning policies for Worcestershire which were set out in the 1997 County of Hereford and Worcester Minerals Local Plan (see Appendix 1).

The scope of the Minerals Local Plan

- 1.8 The Minerals Local Plan provides an overview of relevant issues in the county to help plan effectively for the future. It sets out a long-term vision for mineral development in Worcestershire to 2035 which 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 provides the framework to assess any form of mineral development, but focuses on the mineral resources which are most prevalent in the county and have the highest likelihood of being suitable and commercially attractive for extraction during the lifetime of the plan. It contains strategic policies for where minerals development should take place and the expected level of provision required for a steady and adequate supply of aggregate minerals and an appropriate supply of industrial minerals from Worcestershire. It also includes development management policies to deliver sustainable mineral development, addressing the whole life of a mineral development from inception to after-use. The Minerals Local Plan also contains policies to ensure that mineral resources of local and national importance and supporting infrastructure are not sterilised by non-minerals development where this should be avoided.
- 1.10 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 – 2027⁶.
- 1.11 Implementation of the Minerals Local Plan will be monitored throughout its lifetime through the Authority Monitoring Report⁷. It will be reviewed at least once every five years to ensure that policies remain relevant and effectively address the needs of the local community⁸.

⁵ Planning and Compulsory Purchase Act 2004.

⁶ Available on Worcestershire County Council's Waste Core Strategy webpage www.worcestershire.gov.uk/wcs.

⁷ Worcestershire's Minerals and Waste Development Framework *Authority Monitoring Reports* can be viewed at www.worcestershire.gov.uk/amr.

⁸ Regulation 10A of The Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended).

Relationship with other regulatory regimes

- 1.12 The planning and other regulatory regimes are separate but complementary. The planning system controls the development and use of land in the public interest and is responsible for ensuring that new development is appropriate for its location, taking account of the effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution.
- 1.13 In determining planning applications, the Mineral Planning Authority will therefore focus on whether the development itself is an acceptable use of the land, and the impacts of those uses, rather than any control processes, health and safety issues or emissions themselves where these are subject to approval under other regimes. Mineral planning authorities should assume that these non-planning regimes will operate effectively, but developers will be encouraged to submit Environmental Permit applications at the same time as planning applications, so that all the relevant details can be understood by the determining authorities, consultees and local communities.

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 Worcestershire County Council:
- Analysis of mineral resources in Worcestershire
 - Biodiversity and mineral sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites
 - Building stone in Worcestershire
 - Catchment Based Management in Worcestershire Technical Background Document
 - Clay in Worcestershire

- Coal mining in Worcestershire
- Conventional and unconventional hydrocarbons (oil and gas; excluding coal)
- Crushed rock in Worcestershire
- Crushed Rock Supply in Worcestershire – Summary of action undertaken under the duty to cooperate
- Local Aggregate Assessment
- Location of development: screening and site selection methodology
- Minerals and climate change
- Minerals and waste development framework annual monitoring reports
- 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 The plan 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 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, with continued engagement from members of the Local Nature Partnership building on the strong foundations developed in the preparation of other parts of the development plan.



- 1.17 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)
 - Sustainability Appraisal Fourth Stage Environmental Report (alongside the Fourth 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 (alongside the Third Stage Consultation on the Minerals Local Plan)
 - Habitats Regulations Assessment report (alongside the Fourth 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)
 - Surface and Ground Water Protection Issues, including Flood Risk Assessment of Fourth Stage Consultation (alongside the Fourth 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 plans and policies)
 - Equality Impact Assessment Updated Desktop Screening (alongside the Fourth Stage Consultation on the Minerals Local Plan plans and policies)
 - **Health Impact Assessment**
 - Health Impact Assessment (assessing the Third Stage Consultation on the Minerals Local Plan)
 - Health Impact Assessment Statement (considering how the Fourth Stage Consultation addresses the recommendations of the Health Impact Assessment, and whether any changes could affect its conclusions).

Pre-application engagement

- 1.18 It is expected that all planning applications will take account of their local context and be prepared using robust, up-to-date evidence. Applicants are advised and encouraged to seek pre-application advice from the Mineral Planning Authority and to engage in pre-application consultation with statutory consultees, local communities and interest groups at an early stage to inform the development of their proposals.
- 1.19 The Mineral Planning Authority strongly believes that early engagement with communities can be constructive for both the developer and communities. It can help to avoid misinformation and to address fears, and it allows local knowledge and concerns to be taken into account and incorporated in the final submitted application.
- 1.20 Engaging with the Mineral Planning Authority and key consultees can also improve schemes by:
- helping issues to be resolved through the provision of advice in a timely manner;
 - avoiding unnecessary delays and costs by making sure that all necessary information is provided, particularly where there is a need for formal assessments, such as Environmental Impact Assessment, Habitats Regulations Assessment, Health Impact Assessment or Hydrogeological Impact Assessment;
 - providing the Mineral Planning Authority with the opportunity to highlight other consents that may be required and to identify statutory consultees that developers should liaise with at an early stage; and
 - offering guidance on a locally appropriate approach to delivering the protection and enhancements required in the plan. Taking local circumstances into account at an early stage will enable proposals for mineral workings to respond to the different opportunities for achieving sustainable development.

Ongoing community engagement

- 1.21 The Mineral Planning Authority strongly encourages ongoing community engagement through liaison committees during the lifetime of a minerals site, including its operation, restoration and aftercare. Liaison committees can complement formal monitoring activities undertaken by the Mineral Planning Authority. They are an effective means of keeping local communities informed about operations on site and can help to address any issues arising in a timely, positive and constructive manner.

Planning conditions

- 1.22 Planning conditions are an integral part of a planning permission and are tailored to the specific circumstances of each proposal. They are used to enable development to take place by controlling, managing, mitigating or reducing adverse impacts to an acceptable level. Conditions may relate to the working or phasing of mineral sites to ensure that restoration is carried out to high environmental standards. Planning obligations will be required when conditions are not capable of achieving an acceptable outcome, but a solution is available by legal agreement (see policy MLP 30).

Review of mineral permissions

- 1.23 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.



Worcester

2. Portrait of Worcestershire

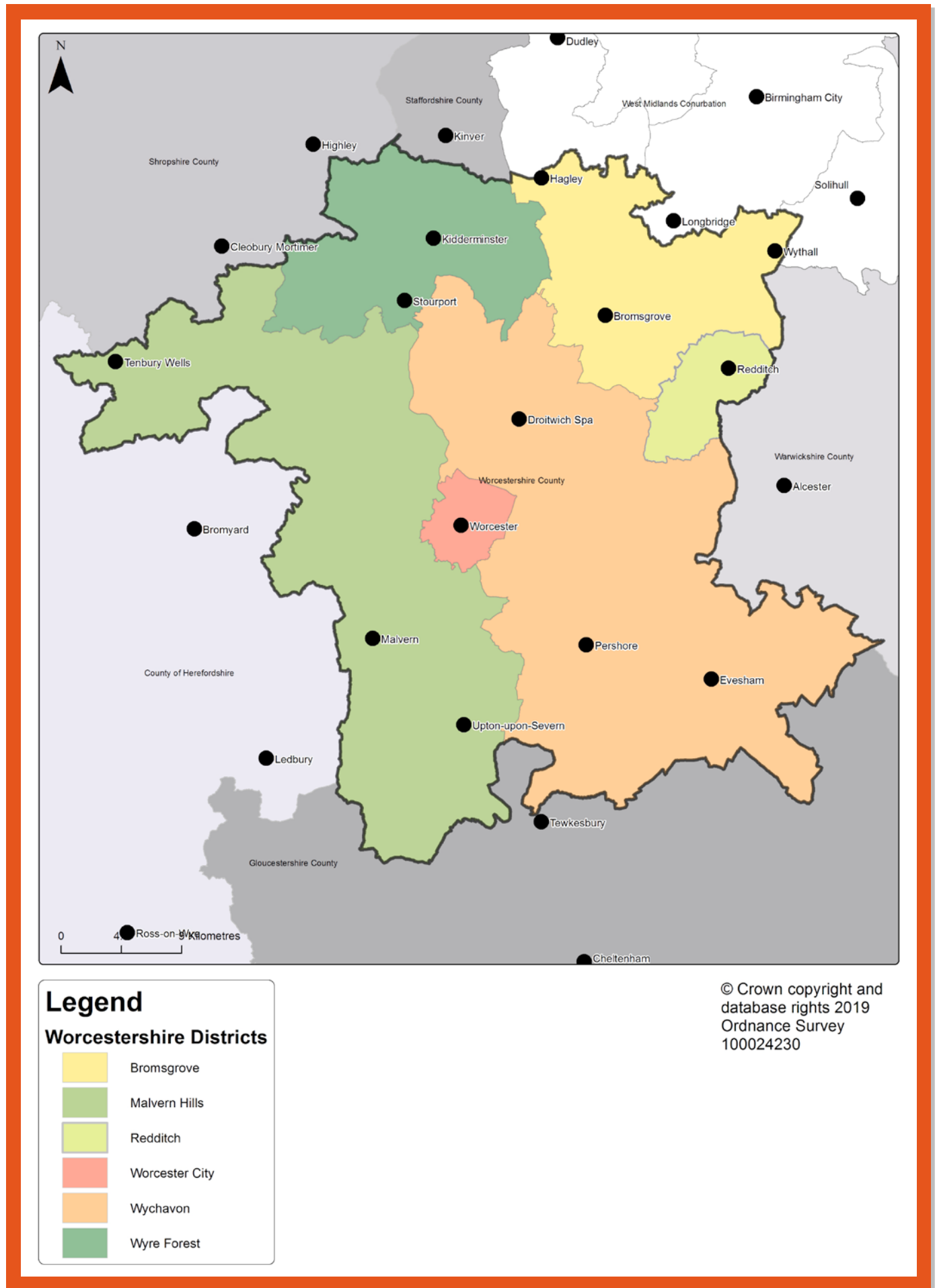
- 2.1 Effective planning requires a good understanding of the current situation and anticipated future changes and demands. It is important that the Minerals Local Plan takes account of Worcestershire's distinctive characteristics, needs and opportunities. Taking account of the aspirations of other relevant plans and strategies will help to ensure that the policies in the plan take the right approach to protecting and enhancing local economic and social well-being and the quality of the environment.
- 2.2 The county of Worcestershire has a population of 588,370⁹ 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.
- 2.3 Worcestershire is adjacent to the West Midlands conurbation and the largely rural counties of Shropshire and Staffordshire to the north, Gloucestershire to the south, Herefordshire to the west and Warwickshire to the east.
- 2.4 Agricultural land and open countryside dominate the landscape, but 70% of the population lives in the urban centres of Worcester, Redditch, Kidderminster, Bromsgrove, Malvern, Droitwich Spa, Evesham and Stourport-on-Severn. Much of the north-east of the county is designated as Green Belt, as well as an area between Worcester and Droitwich Spa.
- 2.5 Worcestershire's natural and historic environment, and diverse landscape character, help to define the county, providing a strong sense of place and playing an important role in attracting and retaining people and businesses¹⁰. The county is rich in high-quality environmental assets which form part of a wider network of green infrastructure.

Context

⁹ Mid-2017 estimate. Office for National Statistics, Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

¹⁰ Worcestershire County Council (2017) *Shaping Worcestershire's Future 2017 - 2022*

Figure 2.1. Worcestershire and surrounding areas



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 Ordnance Survey
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2.6 Significant development is planned in Worcestershire, with anticipated population growth of approximately 7.5% over the plan period¹¹, and total provision of housing and employment land in current Local Plans of around 46,000 and 400ha, respectively¹². Worcestershire County Council’s “Open for Business” agenda¹³ aims to attract new investment and businesses and to support expansion of local industries, and the Worcestershire Local Enterprise Partnership aims to create more than 25,000 new jobs and bring an extra £2.9 billion into the local economy by 2025¹⁴. Minerals, particularly aggregates and brick clay, will be required to support this growth and deliver the county’s new homes, businesses and infrastructure.

2.7 Mineral production is fundamental to economic well-being, with 16% of the total UK economy being directly attributable to minerals.¹⁵ It provides the materials needed for construction and a range of industrial processes. In Worcestershire the minerals sector saw a 100% increase in economic output¹⁶ between 2010 and 2015 and contributes an estimated £6 million to the local economy.¹⁷

Worcestershire’s mineral resources

2.8 The primary purpose of the Minerals Local Plan is to enable a steady and adequate supply of minerals from Worcestershire. In the UK, recycled and secondary materials provide around 30% of aggregates supply, reducing some requirements for primary materials to be extracted, but this source is virtually maximised and primary minerals are likely to form the majority of future supply.¹⁸

2.9 The primary minerals currently worked in Worcestershire are sand and gravel (primarily for aggregate use) and brick clay. Silica sand for industrial use and salt (in the form of brine) are also extracted on a small scale in the county.

2.10 Worcestershire does not currently supply any other types of mineral, although crushed rock was worked in the county until 2010 and local building stone has contributed to Worcestershire’s built heritage.

2.11 Small areas of coal deposits exist in the county but these are no longer classed as a commercial coal resource by the Coal Authority.¹⁹ There are no known oil, gas or hydrocarbon resources in Worcestershire.²⁰

2.12 This means that the most important issues for the Worcestershire Minerals Local Plan are:

- the steady and adequate supply of aggregates (sand and gravel and crushed rock), to meet identified needs to 2035 and beyond;
- the steady and adequate supply of locally and nationally important industrial minerals such as brick clay and silica sand;
- the adequate and diverse supply of building stone to maintain Worcestershire’s built heritage; and
- the need to safeguard locally and nationally important mineral resources, permitted mineral sites and supporting infrastructure from sterilisation by other development.

11 Office for National Statistics. Population figures over a 25-year period, by five-year age groups and sex for local authorities in England: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandtable2>

12 Total housing and employment land provision set out in the adopted Local Plans at time of writing (*Bromsgrove District Plan 2011-2030, Borough of Redditch Local Plan No.4 2011-2030, South Worcestershire Development Plan 2006-2030*, and the *Wyre Forest Core Strategy 2006-26*).

13 Worcestershire County Council (2017) *Shaping Worcestershire’s Future 2017 - 2022*

14 Worcestershire Local Enterprise Partnership (2014) *World Class Worcestershire: Our ten year plan for jobs, growth and the economy*. (These targets were not changed in the Worcestershire Local Enterprise Partnership (October 2017) *Strategic Economic Plan Review*.)

15 *UK Minerals Strategy* (July 2018). The *UK Minerals Strategy* was prepared by the UK minerals and mineral products industry, facilitated by members of the CBI Minerals Group and the Mineral Products Association.

16 Gross Value Added (GVA), see Worcestershire Mineral and Waste Local Development Framework Authority *Monitoring Report April 2015 – December 2015*, www.worcestershire.gov.uk/amr.

17 Gross Value Added (GVA) from the Minerals sector 2015, see Worcestershire Mineral and Waste Local Development Framework Authority *Monitoring Report April 2015 – December 2015*, www.worcestershire.gov.uk/amr.

18 *UK Minerals Strategy* (July 2018). The *UK Minerals Strategy* was prepared by the UK minerals and mineral products industry, facilitated by members of the CBI Minerals Group and the Mineral Products Association.

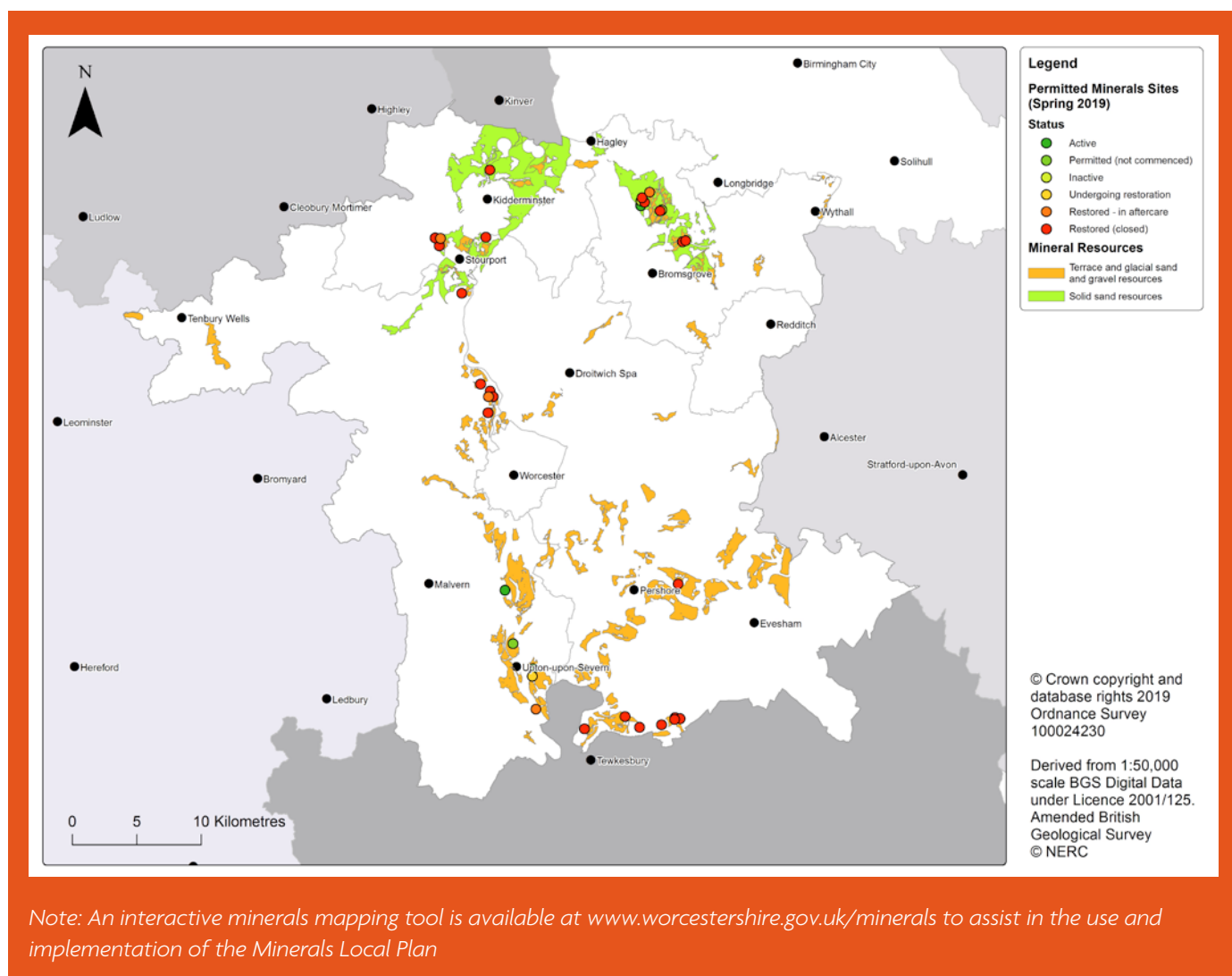
19 The Coal Authority and CoalPro consider the deposits in Worcestershire to be thin to the point of fragmentary and of no commercial value. See the *Coal mining in Worcestershire* background document for more information, available at www.worcestershire.gov.uk/mineralsbackground.

20 See the *Oil and Gas in Worcestershire* background document for more information, available at www.worcestershire.gov.uk/mineralsbackground.

Aggregates

Sand and gravel

Figure 2.2. Sand and gravel resources²¹



2.13 In Worcestershire sand and gravel occurs as terrace and glacial sand and gravel (materials transported and deposited by water or ice)²² and solid sands (which form part of the bedrock geology). These are identified separately in Figure 2.2 as the difference in their geology means they are worked in different ways and this can result in different impacts.

2.14 Extensive sand and gravel deposits are associated with the terraces of the River Severn, the River Avon and the Carrant Brook. They are a mixture of unconsolidated sand and gravel, and are

typically 3m to 6m in thickness, rarely exceeding 10m.²³ 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. Terrace sand and gravel has been worked extensively along the Severn Valley, where working is currently ongoing at two sites²⁴, and along the Carrant Brook, although it has not been worked in this area since the 1990s. In comparison, very little working has taken place in the Avon Valley, where deposits are believed to be thinner and more dispersed.²⁵

21 Figure 2.2 identifies the sand and gravel deposits that have been assessed as “key” or “significant” resources in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*. The *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground

22 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*.

23 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*.

24 Clifton Quarry and Ryall’s Court Farm Quarry (with processing at Ryall House Farm). See Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

25 Garrett (1970) *The Sand and Gravel Resources of the Terrace Deposits of the River Avon from Tewkesbury to Harvington*.

- 2.15 Glacial sand and gravel deposits are more scattered than terrace deposits. They are largely found in the north-eastern part of the county. In general, glacial deposits in Worcestershire are likely to be less than 10m thick, but may exceed 20m thickness where they infilled hollows or channels in underlying deposits.²⁶ These deposits have not been worked extensively in Worcestershire and in recent times have only been worked alongside underlying solid sands.²⁷
- 2.16 Solid sand deposits are found in the weakly-cemented bedrocks of the Wildmoor Sandstone Formation and Kidderminster Formation, which lie between Bromsgrove and the Clent Hills in the north-east of the county and stretch from Stourport on Severn towards Staffordshire and Dudley over the northern county boundary (see Figure 2.2). The Wildmoor Sandstone Formation overlies the Kidderminster Formation across much of this area, with the Kidderminster Formation being more extensive. The Wildmoor Sandstone Formation can be up to 284m thick.²⁸ It is currently worked at three sites in Worcestershire,²⁹ although not to the full depth of the formation. The Kidderminster Formation can be up to 200m thick³⁰ and contains coarse- to fine-grade sand, as well as some pebbles and cobbles in the lower layers. Within Worcestershire, the Kidderminster Formation has not been worked as extensively as the Wildmoor Sandstone Formation, but has been worked at some sites near Bromsgrove.³¹
- 2.17 As the qualities and properties of these sand and gravel deposits vary, they are capable of supplying the markets for various types of sands (sands for asphalt, building or mortar sands, and concrete or sharp sands). Worcestershire's solid sands are easily crushed to produce sand, and building and mortar sands are the primary market for quarries working the Wildmoor Sandstone Formation.³² In the Kidderminster Formation, the sand grains are coarse- to fine-grade, and pebbles and cobbles can also be found,³³ meaning that there is potential for sand and gravel working in this Formation to provide materials to the concrete market, as well as the building sand and mortar markets. Terrace deposits are washed and separated into different sizes of sands and gravels to supply different markets, with the majority of material being sold as concreting sand (sharp sand) and concrete aggregate (gravel, and gravel/sand mixes), but with some being sold as building or mortar sands and asphaltting sand.³⁴
- 2.18 Due to the overlap in their potential uses, solid sand deposits and terrace and glacial sand and gravel deposits in Worcestershire are considered together as "sand and gravel" to facilitate the flexibility of market supply from each resource.

Sales and production of sand and gravel

- 2.19 Planning for the steady and adequate supply of sand and gravel requires consideration of the past, current and future demand for and supply of materials (including imports and exports); the contribution of substitute, secondary and recycled materials and mineral waste to overall supply (discussed further below); and the current landbank of permitted sand and gravel reserves.
- 2.20 Market data suggests that, nationally, permitted reserves of sand and gravel are declining steadily and not being replenished at an equivalent rate through new planning permissions.³⁵ In the longer term this could result in shortages in material supply and increased cost to the economy.³⁶
- 2.21 Between 2007 and 2016, an average of 607,000 tonnes of sand and gravel were produced for aggregate purposes each year in Worcestershire (Figure 2.3. Sand and gravel annual and average sales 2007-2016).³⁷

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

27 Since at least the 1960s.

28 British Geological Survey, Lexicon of Named Rock Units - Result Details: Wildmoor Sandstone Formation.

29 Sandy Lane Quarry, Wildmoor Quarry, Pinches 3 Quarry. See Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

30 British Geological Survey website: The BGS Lexicon of Named Rock Units - Result Details: Kidderminster Formation.

31 Shepley Quarry and Pinches Quarry.

32 Based on information supplied by mineral operators in response to West Midlands Aggregate Working Party's Aggregates Surveys.

33 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*.

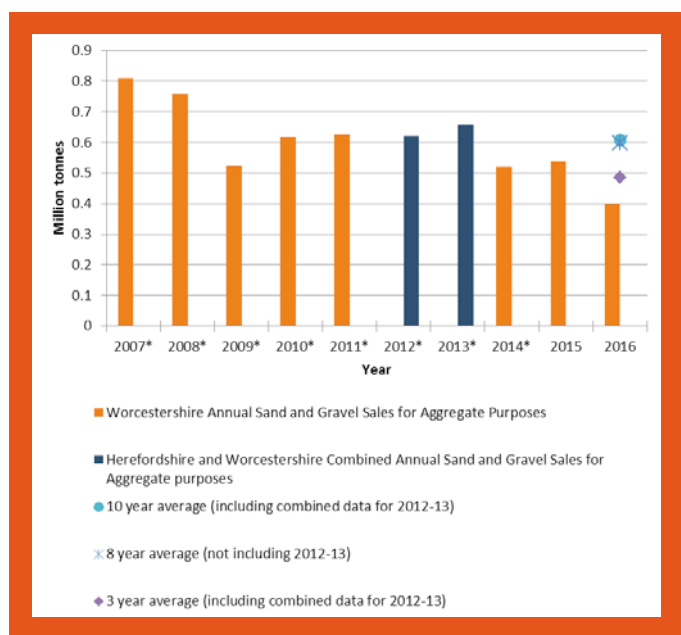
34 Based on information supplied by mineral operators in response to West Midlands Aggregate Working Party's Aggregates Surveys.

35 *UK Minerals Strategy* (July 2018). The *UK Minerals Strategy* was prepared by the UK minerals and mineral products industry, facilitated by members of the CBI Minerals Group and the Mineral Products Association.

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

37 Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

Figure 2.3. Sand and gravel annual and average sales 2007-2016³⁸



2.22 In 2016 there were three “active”³⁹ and two “inactive”⁴⁰ sand and gravel workings and processing facilities in the county, with sales of 399,000 tonnes of sand and gravel. Four of these sites had permitted reserves of sand and gravel for aggregate purposes and one of the sites classed its permitted reserves as “non-aggregate uses”.^{41,42} In addition, planning permissions were granted during 2016 which had not commenced working by 31st December 2016.⁴³ Together, these gave a landbank for sand and gravel in Worcestershire of 6.99-7.07 years at 31st December 2016.⁴⁴ The National Planning Policy Framework sets a landbank requirement for sand and gravel of at least 7 years.⁴⁵

Exports and imports of sand and gravel

2.23 National data indicates that Worcestershire was a net exporter of sand and gravel in both 2009 and 2014,⁴⁶ although the proportion of imports was greater in 2014 (Table 2.1. Balance of sand and gravel exports and imports in Worcestershire).

Table 2.1. Balance of sand and gravel exports and imports in Worcestershire⁴⁷

Year	Exports	Imports	Balance
2009	104,000 tonnes	58,000 tonnes	Net exporter (46,000 tonnes)
2014	180,000 tonnes	148,000 tonnes	Net exporter (32,000 tonnes)

2.24 As aggregates are bulky, costly to transport and generally fairly low value, they are typically only transported about 30 miles from their source.⁴⁸ However, where a particular resource serves a distinct market, or where suitable resources are not available more locally, materials may travel further to meet demand. Local data shows that, of the sand and gravel produced in Worcestershire in 2016, approximately 50% was sold within Worcestershire, 36.5% was exported to the wider West Midlands, 13.5% to the South West, and less than 1% to South Wales.⁴⁹ There is no equivalent information available to indicate the level of imports into Worcestershire in 2016.

Future sand and gravel supply

2.25 50.8% of Worcestershire’s sand and gravel deposits⁵⁰ are not affected by significant viability, environmental or amenity constraints (60.2% of Worcestershire’s solid sand deposits⁵¹ and 45.4% of Worcestershire’s terrace and glacial sand and gravel deposits⁵²).

38 Figure 1 from Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

39 “Active” sites are permitted minerals sites in production for some time during the year.

40 “Inactive” sites are permitted minerals sites worked in the past and containing permitted reserves.

41 In the 2016 West Midlands Aggregate Working Party’s annual Aggregates Survey returns, one of the sites classed its permitted reserves as “non-aggregate” and therefore have not been included in the permitted reserves and landbank figures, but it is possible that the material could be reclassified and sold as aggregate in future.

42 A Review of Mineral Permission submission was required for one of these sites, Sandy Lane Quarry, by 20th March 2017 but was not submitted. Planning permission for the reserves at this site has therefore expired and the site is undergoing restoration.

43 Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

44 Landbank at 31st December 2016 based on permitted sand and gravel reserves of 4,244-4,294 million tonnes and an annual production guideline of 0.607 million tonnes. Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

45 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 207(f).

46 Communities and Local Government, British Geological Survey and Welsh Assembly Government (2009 and 2014) *Aggregate minerals survey for England and Wales*, <https://www.gov.uk/government/collections/minerals>. Discussion with the authors of these documents has revealed that the information does not represent a complete dataset from all mineral operators (Email correspondence with Mr T Bide at the British Geological Survey (7th August 2017) revealed that for 2009 responses were only received for two quarries in Worcestershire, and in 2014 for only 1 quarry). Significant caution must therefore be applied in relying on this data.

47 Communities and Local Government, British Geological Survey and Welsh Assembly Government (2009 and 2014) *Aggregate minerals survey for England and Wales*, <https://www.gov.uk/government/collections/minerals>.

48 Mineral Products Association (2015) *Make the link: The mineral products industry’s contribution to the UK*.

49 Based on information supplied by mineral operators in response to West Midlands Aggregate Working Party’s Aggregates Surveys.

50 By area (14,230 hectares of 28,015 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

51 By area (6,170 hectares of 10,245 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

52 By area (8,060 hectares of 17,770 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

- 2.26 The Local Aggregate Assessment considers the average level of sales of sand and gravel from Worcestershire alongside other relevant local information to set a “production guideline”. The baseline Local Aggregate Assessment⁵³ identifies an annual production guideline of 0.607 million tonnes.
- 2.27 It is estimated that a further 11.53 million tonnes of sand and gravel will need to be permitted in Worcestershire over the plan period to meet this annual production guideline and to maintain at least a 7 year landbank of permitted reserves.⁵⁴ Due to the quantities of sand and gravel required, the scale and distribution of the resources, and the tendency for mineral workings in Worcestershire to be small scale in comparison to other parts of the country, multiple sand and gravel workings are likely to be required over the life of the plan in order to achieve this.
- 2.28 These estimates assume that the balance of sand and gravel supply will continue to include substitute, secondary and recycled materials and minerals wastes (as discussed below) at the current proportion.⁵⁵ If this contribution were to reduce, additional primary resources would be needed to fill the gap. However, significant variation is considered unlikely in Worcestershire due to the established practice of recycling building materials for use as aggregates on site.
- Crushed Rock⁵⁶**
- 2.29 Bedrock deposits occur in Worcestershire which are suitable for being used as crushed rock for aggregates. The qualities and properties of these deposits vary, although each type of deposit may be capable of supplying various markets (such as roadstone, railway ballast, concrete aggregate, or other construction aggregates). Due to the overlap in their potential uses, the crushed rock deposits in Worcestershire are considered together to facilitate the flexibility of market supply from each resource.
- 2.30 Limestone deposits of the Jurassic Inferior Oolite Group are found in the south of the county in the Cotswold outlier Bredon Hill and on the edge of the Cotswold plateau near Broadway. Inferior Oolite limestone is relatively soft and porous, with a maximum thickness of 20m. It is used for low-quality aggregate purposes such as constructional fill, as well as for building stone.^{57 58} Oolitic limestone was produced from Broadway Quarry at Fish Hill in the Cotswolds where extraction ceased in 2010. Smaller deposits of relatively thin and shaly Aymestry Limestone and Woolhope Limestone form the Suckley, Abberley and Woodbury Hills in the west of the county. Aymestry Limestone is between 15m and 40m thick and is generally lower in purity than some other limestones, grading to calcareous mudstone.⁵⁹ Aymestry limestone was produced from a succession of quarries in the Abberley and Suckley Hills, notably at Penny Hill, Abberley Hill and Woodbury Hill, the last of which closed in the 1990s. Woolhope Limestone is generally around 15m thick. It is often only suitable for production of constructional fill, although there may be areas where the formation comprises relatively clean, good-quality limestones suitable for aggregate use.⁶⁰
- 2.31 Ordovician Lickey Quartzite occurs in a small inlier near Bromsgrove. This may be suitable for uses which require high resistance to abrasion.⁶¹
- 2.32 Rocks of the Malverns Complex and Warren House Formation occur in the Malvern Hills on the county’s western boundary with Herefordshire, and include rocks which have previously been worked as a source of aggregate suitable for use in road construction and maintenance, as well as for building stone.⁶² The working of crushed rock in the Malvern Hills ceased in 1977.

53 Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

54 Figure based on the production guideline of 0.607 million tonnes each year from 2017 to 2035, but the plan includes sufficient flexibility to adapt to any changes in the production guideline.

55 The *UK Minerals Strategy* (July 2018) states that in the UK, recycled and secondary materials provide around 30% of aggregates supply but that this source is virtually maximised. The *UK Minerals Strategy* was prepared by the UK minerals and mineral products industry, facilitated by members of the CBI Minerals Group and the Mineral Products Association.

56 Sometimes referred to as “hard rock”.

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

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*.

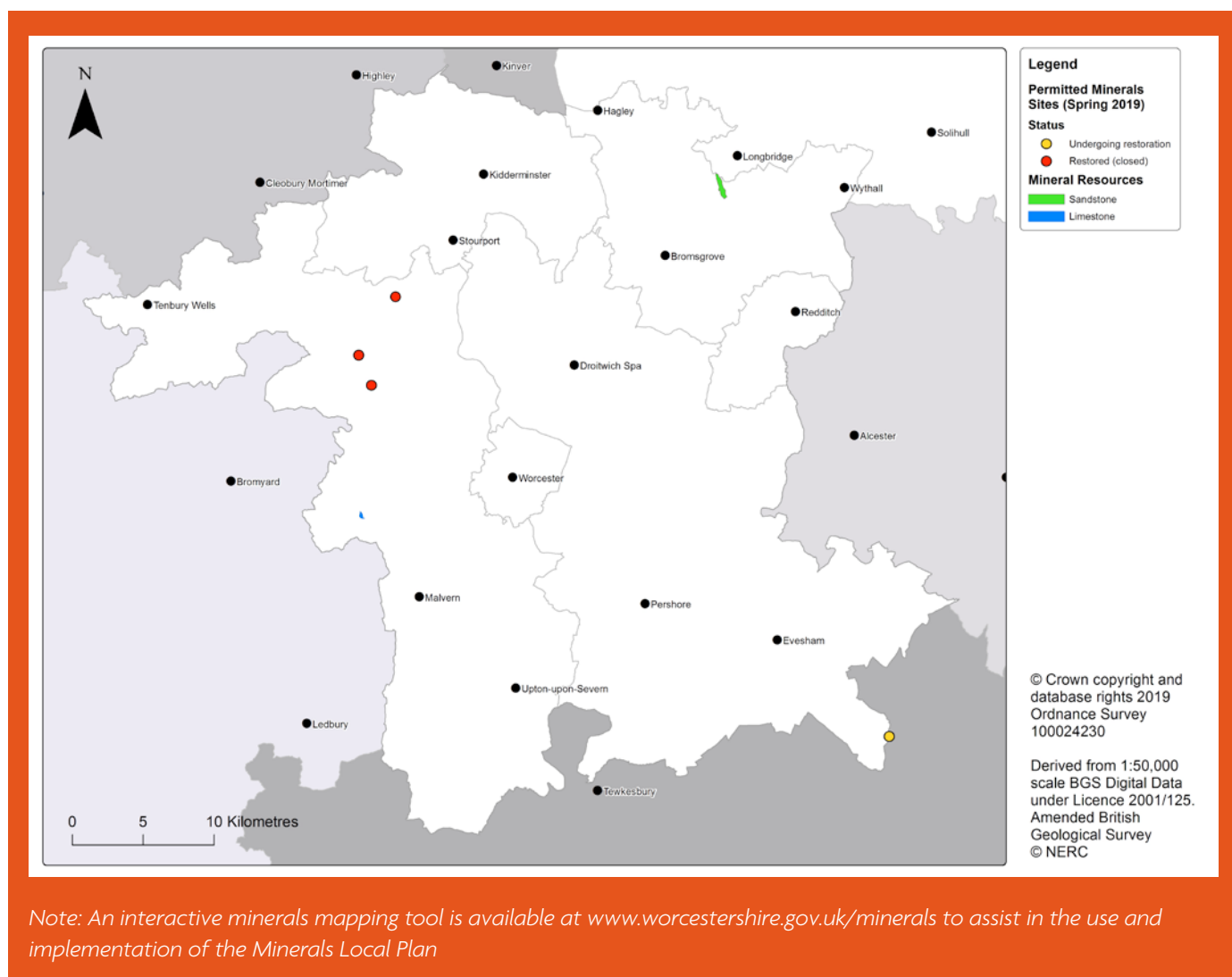
59 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints*.

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*.

62 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*.

Figure 2.4. Crushed rock resources⁶³



Sales and production of crushed rock

2.33 Planning for the steady and adequate supply of crushed rock requires consideration of past, current and future demand for and supply of materials (including imports and exports); the contribution of substitute, secondary and recycled materials and mineral waste to overall supply (discussed further below); and the current landbank of permitted crushed rock reserves.

2.34 Between 2007 and 2016 it is estimated that an average of 26,000 tonnes of crushed rock were produced for aggregate purposes each year in Worcestershire⁶⁴, although no extraction has taken place since 2010 (Figure 2.5. Crushed rock annual and average sales 2007-2016).

2.35 During this time there was only one active crushed rock working in the county.⁶⁵ Working at this site ceased in 2010. In 2016, there were no permitted crushed rock sites and no remaining permitted crushed rock reserves in Worcestershire, meaning that the landbank for crushed rock in Worcestershire was 0 years.⁶⁶ The National Planning Policy Framework sets a landbank requirement for crushed rock of at least 10 years.⁶⁷

63 **Sales and production of crushed rock** identifies the crushed rock deposits that have been assessed as “key” or “significant” resources in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*. The *Analysis of Minerals Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

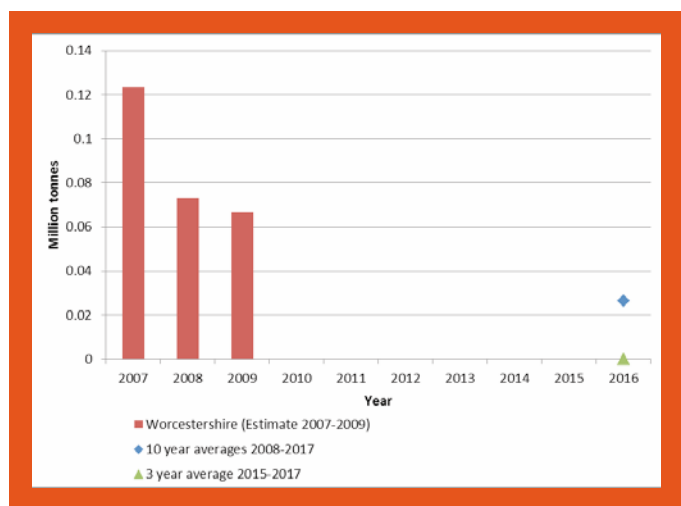
64 Estimated sales based on the assumption that a third of the combined crushed rock sales from Herefordshire and Worcestershire were attributable to Worcestershire as data was combined due to issues of commercial confidentiality. See Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

65 Broadway Quarry at Fish Hill, working Oolitic Limestone.

66 Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

67 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 207(f).

Figure 2.5. Crushed rock annual and average sales 2007-2016⁶⁸



Imports and exports of crushed rock

2.36 National data indicates that Worcestershire imported approximately 540,000 tonnes of crushed rock in 2014, with more than twice as much crushed rock being imported and consumed in the county in 2014 compared to 2009 (Table 2.2. Balance of crushed rock exports and imports in Worcestershire).⁶⁹ There is no information available to indicate the level of imports into Worcestershire in 2016, however all of the demand for crushed rock in Worcestershire since 2011 has been met by imports.

Table 2.2. Balance of crushed rock exports and imports in Worcestershire⁷⁰

Year	Exports	Imports	Balance
2009	0 tonnes	192,000 tonnes	Net exporter (192,000 tonnes)
2014	0 tonnes	540,000 tonnes	Net exporter (540,000 tonnes)

Future crushed rock supply

2.37 Only 3.9% of Worcestershire’s crushed rock deposits are not affected by significant viability, environmental or amenity constraints.⁷¹ These are identified in Figure 2.4, and the constraints on each type of crushed rock deposit are outlined below:

- Of the land containing Malverns Complex and Warren House Formation deposits in Worcestershire:
 - 99.4%⁷² is within the Malvern Hills Area of Outstanding Natural Beauty;⁷³ and
 - 82.7%⁷⁴ is controlled by the Malvern Hills Conservators⁷⁵ who own the mineral rights and have a unique responsibility “to save the beauty of the Hills and protect them from the threat of quarrying”⁷⁶

68 Figure 4 from Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

69 Communities and Local Government, British Geological Survey and Welsh Assembly Government (2009 and 2014) *Aggregate minerals survey for England and Wales*, <https://www.gov.uk/government/collections/minerals>. Discussion with the authors of these documents has revealed that the information does not represent a complete dataset from all mineral operators (Email correspondence with Mr T Bide at the British Geological Survey (7th August 2017) revealed that for 2009 responses were only received for two quarries in Worcestershire, and in 2014 for only 1 quarry). Significant caution must therefore be applied in relying on this data.

70 Communities and Local Government, British Geological Survey and Welsh Assembly Government (2009 and 2014) *Aggregate minerals survey for England and Wales*, <https://www.gov.uk/government/collections/minerals>.

71 By area (61 hectares of 1706 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

72 By area (541 hectares of 544 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

73 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework* (paragraph 205(a)) states that mineral planning authorities should, as far as practical, provide for the maintenance of non-energy minerals from outside National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites, scheduled monuments and conservation areas.

74 By area (450 hectares of 544 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

75 The Malvern Hills Conservators have used the working name of the Malvern Hills Trust since 2017. For the purposes of the Minerals Local Plan, they are referred to as the Malvern Hills Conservators to reflect their official name.

76 Malvern Hills Act 1924. Further details regarding the unique legislative context of quarrying in the Malvern Hills is set out in background document *The Malvern Hills Acts* available at www.worcestershire.gov.uk/mineralsbackground.

- Of the land containing limestone deposits in Worcestershire:
 - 68.8%⁷⁷ is within 2.5km of the Bredon Hill Special Area of Conservation (SAC);⁷⁸ and
 - 94.2%⁷⁹ is within the Malvern Hills Area of Outstanding Natural Beauty or the Cotswolds Area of Outstanding Natural Beauty.⁸⁰
- None of the land containing Lickey Quartzite deposits in Worcestershire are affected by significant viability, environmental or amenity constraints.⁸¹

2.38 The viability, environmental and amenity constraints outlined above are not in themselves an absolute bar to working crushed rock deposits in Worcestershire. However the combination of the significant level of environmental protection imposed through legislation and policy tests and the unique responsibility of the Malvern Hills Conservators⁸² together mean that crushed rock has not been worked in Worcestershire since 2010 and is unlikely to be commercially attractive for the foreseeable future. The Local Aggregate Assessment therefore considers this local information alongside the average level of sales of crushed rock from Worcestershire to set a “production guideline”. The baseline Local Aggregate Assessment⁸³ identifies an annual production guideline of 0 tonnes per annum (zero).⁸⁴

2.39 It is not possible to calculate the level of demand for crushed rock which will arise in Worcestershire over the life of the Minerals Local Plan. However, it is likely that the majority of Worcestershire’s demand for crushed rock has been met by

imports of crushed rock from other mineral planning authority areas since 2011, and this is reflected in sales data for those areas. Surrounding Mineral Planning Authorities and the West Midlands, East Midlands, South West and South Wales Aggregate Working Parties have indicated that supplying Worcestershire’s demand for crushed rock can continue to be accommodated, but that Worcestershire’s Minerals Local Plan should enable crushed rock development if these constraints can be overcome.⁸⁵

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

2.40 It may be possible to reduce the need for primary aggregates through the use of substitute materials in construction. However the use of substitutes will vary depending on individual development proposals. There is no data available to indicate the level of contribution made by substitute materials in Worcestershire, but any reduction in demand will be reflected in the level of sales recorded in the Local Aggregate Assessment.

2.41 Recycled and secondary aggregates play an important role in minimising the need for the 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, the highest levels in Europe,⁸⁶ but there is little scope to increase this further as this source is virtually maximised.⁸⁷

77 By area (763 hectares of 1,109 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

78 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 the development (the plan or project) is likely to have a significant effect on a European site (termed a ‘habitats site’ in the National Planning Policy Framework), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site (Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 177). Based on the Habitats Regulation Assessment screening for the Worcestershire Minerals Local Plan it is considered unlikely that most forms of crushed rock development would be acceptable in planning terms.

79 By area (1,045 hectares of 1,109 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

80 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework* (paragraph 205(a)) states that mineral planning authorities should, as far as practical, provide for the maintenance of non-energy minerals from outside National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites, scheduled monuments and conservation areas.

81 By area (53 hectares of 53 hectares). Worcestershire County Council (April 2019) *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

82 The Malvern Hills Conservators have used the working name of the Malvern Hills Trust since 2017. For the purposes of the Minerals Local Plan, they are referred to as the Malvern Hills Conservators to reflect their official name.

83 Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

84 This has been agreed by members of the West Midlands, South West, South Wales and East Midlands Aggregate Working Parties. See Worcestershire County Council, *Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*.

85 Worcestershire County Council, *Strategic cross boundary issue: Crushed rock supply in Worcestershire. Summary of action undertaken under the duty to cooperate*.

86 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/>

87 *The UK Minerals Strategy* (July 2018) states that in the UK, recycled and secondary materials provide around 30% of aggregates supply but that this source is virtually maximised. The *UK Minerals Strategy* was prepared by the UK minerals and mineral products industry, facilitated by members of the CBI Minerals Group and the Mineral Products Association.

2.42 Recycled aggregates arise from several sources, notably from the demolition of buildings or from civil engineering works such as road resurfacing and railway track maintenance. Significant amounts of recycled aggregates are produced in Worcestershire from the management of construction and demolition waste (C&D waste). It is estimated that this could provide up to 420,000 tonnes of recycled aggregates per year.⁸⁸ The supply of recycled materials will depend on the county's capacity to process these materials. The Worcestershire 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.

2.43 Secondary aggregates is a term often used to describe minerals 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. There is an Energy from Waste Plant in Worcestershire that produces 40,000 tonnes per annum of incinerator bottom ash, and an Incinerator Bottom Ash Processing and Recovery Facility at Hill and Moor Landfill Site was granted planning permission in January 2017. The processed incinerator bottom ash may be capable of being used as secondary aggregate. There are no other industrial processes in Worcestershire which are known to produce secondary aggregates.

Industrial Minerals

Silica sand

2.44 Silica sands are essential raw materials for some industrial uses. Different types of silica sands have different combinations of chemical and physical properties which make them suitable for specific uses and different industries. Different types of silica sand are used in glass-making compared

to those used in the foundry industry, and silica sands can also have a wide range of applications in other sectors including horticulture.

2.45 In Worcestershire, a type of silica sand known as “naturally bonded moulding sand”, or “foundry sand”, occurs as a finer-grained horizon within the solid sand deposits of the Wildmoor Sandstone Formation in the north of the county around Kidderminster and Bromsgrove.⁸⁹ This was historically important in the foundry industry as it contains sufficient clay to give the mould strength without the addition of a bonding agent.⁹⁰ Silica sand from Worcestershire is not used in glass manufacture or other industrial uses as different grades of silica sand are not usually interchangeable.

Sales and production of silica sand

2.46 In 2016, silica sand was worked at one “active” site⁹¹, with further permitted reserves in one “inactive” site⁹². Both of these sites are near Bromsgrove. There is no information regarding where silica sand occurs within the Wildmoor Sandstone Formation beyond the boundary of existing sites.

2.47 In 2013, just 2,000 tonnes of sand for foundry uses was sold from Worcestershire.^{93 94} This is 88% lower than sales in 1999,⁹⁵ largely due to the increased industry use of high-silica, clay-free (washed) and synthetic sands as foundry sands which can more easily be controlled to meet precise specifications.⁹⁶ However, this small amount of material supplies multiple small foundries around the UK.⁹⁷

88 See “Waste Core Strategy for Worcestershire” for further details at www.worcestershire.gov.uk/wcs.

89 The majority of the Wildmoor Sandstone Formation consists of coarser sands which are used for aggregate purposes (British Geological Survey (1999) *Mineral resource Information for Development Plans: Herefordshire and Worcestershire: Resources and Constraints*).

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 Wildmoor Quarry (formerly John Williams Cinetic Sand). “Active” sites are permitted minerals sites in production for some time during the year.

92 Sandy Lane Quarry (formerly Stanley N. Evans Ltd). “Inactive” sites are permitted minerals sites worked in the past and containing permitted reserves. A Review of Mineral Permission submission was required for this site by 20th March 2017 but was not submitted. Planning permission for the reserves at this site has therefore expired and the site is undergoing restoration.

93 Department for Communities and Local Government (February 2015) *Mineral extraction in Great Britain 2013: Business Monitor PA1007* (Table 1 – Industrial sand). This is the most recent data available for Worcestershire, as the data for Worcestershire in the 2014 report was withheld to avoid disclosure of information relating to an individual undertaking without the consent of the person carrying on that undertaking.

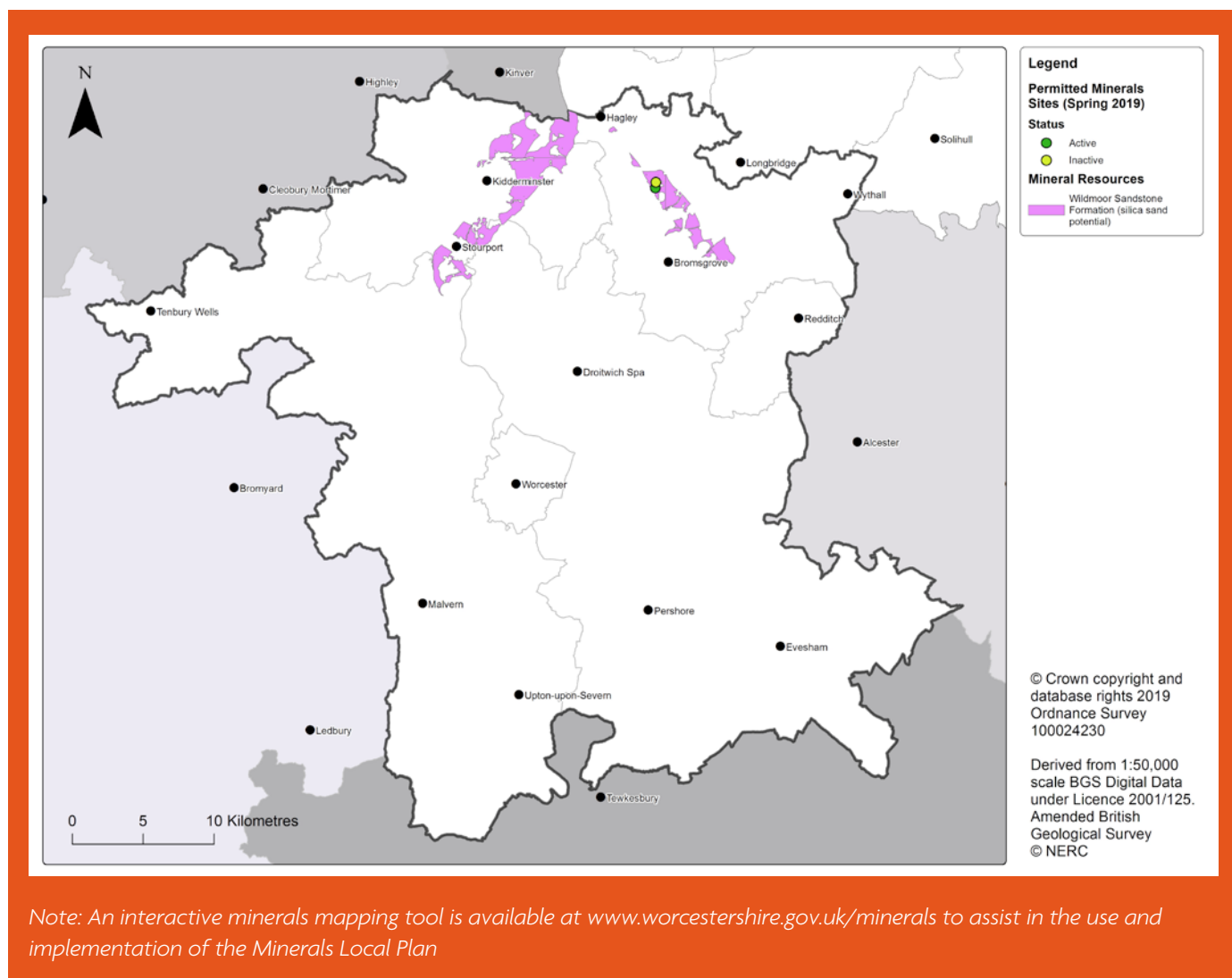
94 Some silica sand from Worcestershire was also sold for agricultural, horticultural, and leisure uses, but the exact quantities are unknown as the data was withheld to avoid disclosure of information relating to an individual undertaking without the consent of the person carrying on that undertaking. Department for Communities and Local Government (February 2015) *Mineral extraction in Great Britain 2013: Business Monitor PA1007* (Table 1 – Industrial sand).

95 2000 tonnes in 2013, compared to 17,000 tonnes in 1999. Department for Communities and Local Government (February 2015) *Mineral extraction in Great Britain 2013: Business Monitor PA1007* (Table 1 – Industrial sand), and Office for National Statistics (2000) *Mineral extraction in Great Britain 1999: Business Monitor PA1007*.

96 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*.

97 Worcestershire County Council (September 2018) *Silica Sand in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.

Figure 2.6. Potential for silica sand resources⁹⁸



Imports and exports of industrial sand

2.48 Although Worcestershire is one of only eight areas nationally that produce sand for foundry use it contributes less than 1% of national supply.⁹⁹ No information is available on whether any silica sand is imported into Worcestershire.

Future silica sand supply

2.49 52.0% of Worcestershire's silica sand (Wildmoor Sandstone Formation) deposits are not affected by significant viability, environmental or amenity constraints.¹⁰⁰

2.50 The low levels of demand for naturally bonded moulding sand make it unlikely that quarries primarily for silica sand will be required during

the lifetime of the Minerals Local Plan. It is more likely to continue to be worked on a small scale where it occurs alongside solid sands worked for aggregate purposes.

Brick clay

2.51 Brick clay is used mainly in the manufacture of structural clay products, such as facing and engineering bricks, pavers, clay tiles and vitrified clay pipes. Across the UK, brick manufacture is the largest tonnage use.¹⁰¹ The suitability of a clay for manufacturing structural clay products depends principally on its behaviour during shaping, drying and firing.¹⁰²

⁹⁸ Naturally bonded moulding sand, a type of silica sand, occurs within the Wildmoor Sandstone Formation but there is no information available to determine how widespread silica sand might be within the Formation. Silica sands are essential raw materials for some industrial uses. Different types of silica sands have different combinations of chemical and physical properties which make them suitable for specific uses and different industries. Different types of silica sand are used in glass-making compared to those used in the foundry industry, and silica sands can also have a wide range of applications in other sectors including horticulture. identifies the Wildmoor Sandstone Formation deposits after environmental and amenity screening criteria have been taken into account. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

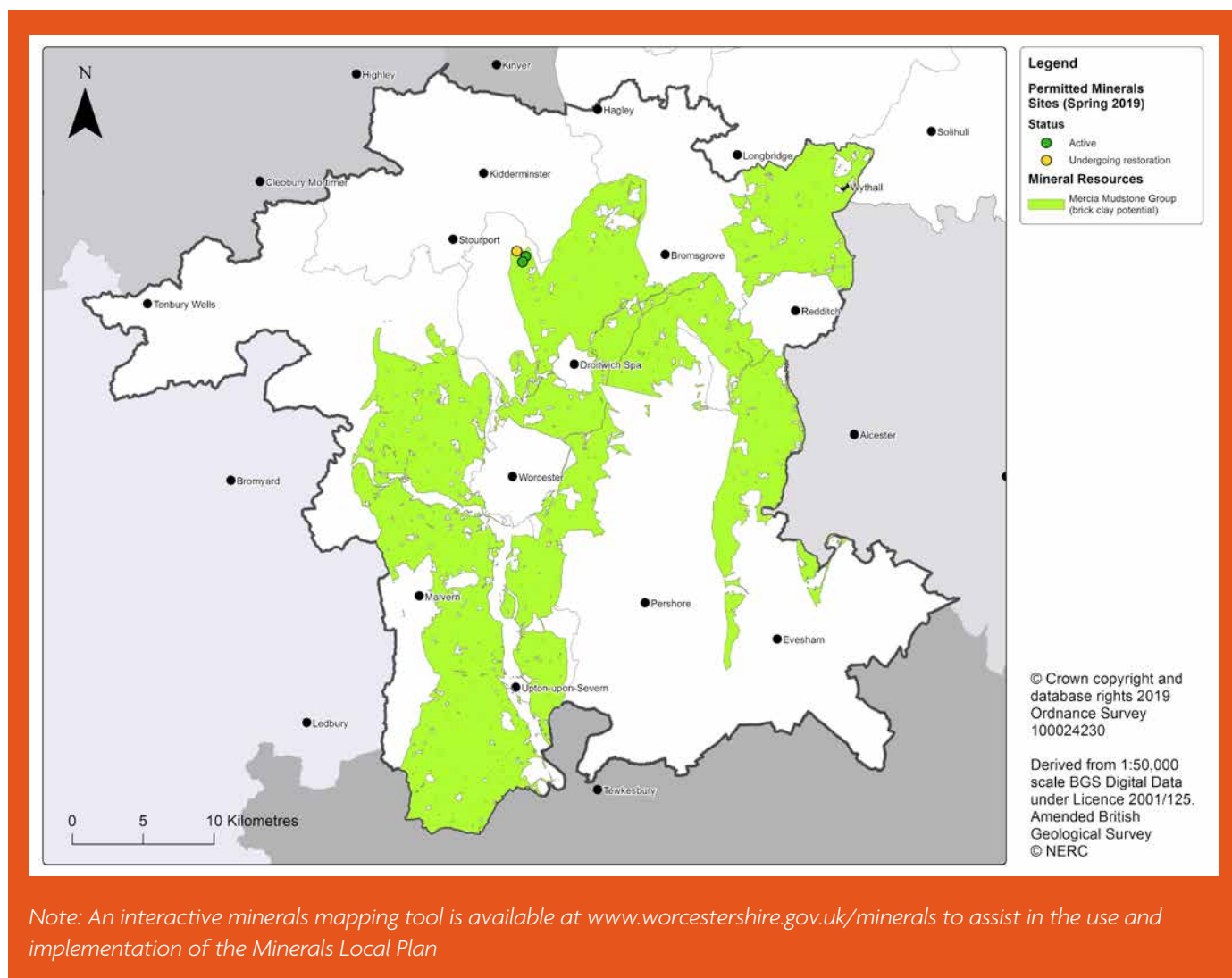
⁹⁹ Department for Communities and Local Government (February 2013) *Mineral extraction in Great Britain 2011, Business Monitor PA1007* (Table 1 – Industrial sand)

¹⁰⁰ By area (3,284 hectares of 6,317 hectares). For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

¹⁰¹ Department for Communities and Local Government and British Geological Survey (2007) *Mineral Planning Factsheet - Brick clay*.

¹⁰² 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*.

Figure 2.7. Potential for brick clay resources¹⁰³



2.52 There are nine different geological groups in Worcestershire that possess some clay properties,¹⁰⁴ and the distribution of clay pits, brick works and kilns recorded in the Historic Environment Record and historic Ordnance Survey maps suggests that all of the different clay groups found in the county have been used to some extent in the past.¹⁰⁵ However, modern planning applications for clay extraction in Worcestershire have all been limited to a localised area near Hartlebury, to the south of Kidderminster, working the formations of the Mercia Mudstone Group.

2.53 Clay from the Mercia Mudstone Group in this area has consistent forming and firing properties and a relatively low firing temperature, making it suitable for use in the commercial manufacture of bricks and related products.¹⁰⁶ Whilst the Mercia Mudstone Group is found extensively across the south-west, central and north-eastern parts of the county, the composition of the formation and therefore the suitability for use in brickmaking in areas away from the current workings is largely unknown.¹⁰⁷

¹⁰³ Figure 2.7. Potential for brick clay resources identifies the Mercia Mudstone Group deposits after environmental and amenity screening criteria have been taken into account. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.
¹⁰⁴ Bridgnorth Sandstone Group, Mercia Mudstone Group, Lias Group, Sherwood Sandstone Group, Warwickshire Group, Penarth Group, Lower Old Red Sandstone Group, Downton Group, Wenlock Group.
¹⁰⁵ Worcestershire County Council (September 2018) *Clay in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.
¹⁰⁶ 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*.
¹⁰⁷ 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*.

Sales and production of brick clay in Worcestershire

2.54 Mercia Mudstone is currently worked at two sites in Worcestershire, near Hartlebury, both of which have associated brick works.¹⁰⁸ Together the sites and brick works are capable of producing over 2 million bricks per week and a range of pipes and tiles. They have been operational since the 1980s.

2.55 Sales of brick clay from Worcestershire are approximately 126,000 tonnes per annum,¹⁰⁹ contributing approximately 3% to national supplies of clay for brick, pipes and tiles.¹¹⁰

Imports and exports

2.56 National import volumes of clay bricks increased six-fold between 2011 and 2014.¹¹¹ In 2015 the UK imported between 50,000 and 90,000 tonnes of bricks per month.¹¹² 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 to prevent an over-reliance on imports.

2.57 Worcestershire 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. No official data is available on the imports and exports of bricks or brick clay in the county, but discussions with industry indicate that although fewer than 10% of the bricks produced in Worcestershire are sold within the county, the amount produced would theoretically be sufficient to supply demand from within Worcestershire as well as contribute to national supply.¹¹³ The balance of imports and exports is likely to be due to requirements for bricks with different structural and aesthetic attributes.

2.58 It is likely that some clay is imported from other Mineral Planning Authority areas.¹¹⁴ Blending different clays to improve durability and provide a range of colours and aesthetic qualities is an increasingly common feature of the brick industry.¹¹⁵

Future brick clay supply

2.59 Nationally there has been an overall decline in sales of brick clay, bricks and brick products, due in part to alternative materials being used in construction and a trend towards building smaller houses and flats (which require fewer bricks per unit).¹¹⁶ However the national impetus for additional homes may result in increased demand.

2.60 75.3% of Worcestershire's brick clay (Mercia Mudstone Group) deposits are not affected by significant viability, environmental or amenity constraints.¹¹⁷

2.61 Each of the clay workings in Worcestershire has a stock of permitted reserves sufficient for the life of the plan.¹¹⁸ However, as the two sites for brick clay in the county are run by a single operator, Worcestershire's supply of brick clay, bricks and brick products could be particularly vulnerable to market decisions. This means that flexibility is needed to allow other proposals to come forward, as well as to enable provision of brick clay from a number of different sources to enable appropriate blends to be made.

108 Waresley Quarry (Waresley Brickworks) and New House Farm Quarry (Hartlebury Brickworks).

109 10 year average based on *Mineral extraction in Great Britain, Business Monitor PA1007* reports for 2005 to 2014. Data for Worcestershire was only published for 2012, 2011, 2010, and 2006. The data for other years was withheld to avoid disclosure of information relating to an individual undertaking without the consent of the person carrying on that undertaking.

110 Based on sales of 111,000 tonnes from Worcestershire compared to the Great Britain total of 3,569,000 tonnes in 2012. Department for Communities and Local Government (February 2014) *Mineral extraction in Great Britain 2012: Business Monitor PA1007* (Table 8 – Clay & Shale).

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

112 January – July figures given in presentation by the Mineral Products Association on the emerging *UK Minerals Strategy* to the Royal Town Planning Institute and Mineral Products Association Conference: *Securing a sustainable supply of minerals* on 20th May 2015.

113 This is based on information from one operator only but is indicative of the market situation [confidential correspondence December 2012].

114 Discussions with surrounding Mineral Planning Authorities indicate that this is likely to be the case, although data is limited.

115 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*.

116 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, page 17.

117 By area (55,364 hectares of 73,543 hectares). For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

118 Based on the figure for the remaining stock of permitted reserves in December 2016 (as provided in confidential discussions with the operator of the clay sites in Worcestershire, Weinerberger, April 2017), the permitted reserves would last approximately 63 years based on the 10 year average of known annual sales, but based on the sites' maximum potential output this could be less than 25 years.

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

- 2.62 There is limited scope to substitute clay in brick manufacture itself, although colliery waste, Pulverised Fuel Ash (PFA), Incinerator Bottom Ash (IBA), granular blast furnace slag, ground recycled glass, and even some waste materials including sawdust, straw, foamed polystyrene and water treatment and sewage sludge have been used to some extent in brick manufacture.¹¹⁹ Concrete blocks, pipes and tiles are the main alternatives to clay products.¹²⁰ 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.
- 2.63 The re-use of bricks to match styles is common in building conservation. 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.¹²¹ Bricks from newer buildings are more often crushed and re-used as low-quality aggregate. Reusing bricks is often more costly than purchasing new bricks because the reclamation process is labour intensive.

Salt and brine

- 2.64 Salt can be extracted in two forms: as a solid rock salt (or halite), or as liquid brine. Brine is created where ground water percolates through and dissolves the rock salt. In Worcestershire, rock salt occurs in beds of up to 11m thick, but mostly less than 4m, within the Droitwich Halite Member (part of the Mercia Mudstone Group) which underlies an area around Droitwich and Stoke Prior to the north-east of Worcester and is around 160m thick, with its top at a depth of 250m.¹²²

- 2.65 Whilst there is some geological information available regarding the geographic extent of solid rock salt (halite) in Worcestershire, and brine occurs around Droitwich and Stoke Prior, there is very little information regarding the full extent of brine due to the complex hydrology of the area. Historic information suggests that brine is not limited to the areas of the county which are in proximity to the mapped rock salt deposits.¹²³
- 2.66 Historically, rock salt was mined at Stoke Prior near Droitwich until the workings flooded. Brine was extracted on an industrial scale in and around Droitwich by pumping until the 1970s when operations were closed due to subsidence problems affecting Droitwich and the surrounding area.¹²⁴

Sales and production of salt and brine

- 2.67 Brine is extracted on a small scale from one site in Droitwich.¹²⁵ This site formerly supplied a brine bath facility which closed in 2008¹²⁶ and now provides brine for the small-scale commercial production of edible salt.¹²⁷

Imports and exports

- 2.68 With only small-scale production of salt or brine which is used within the county, Worcestershire is an importer of these products. In 2014 most national supply was met from extraction in Cleveland and Cheshire.¹²⁸

Future salt supply

- 2.69 As rock salt in Worcestershire occurs in relatively thin beds at a significant depth, it is unlikely that these deposits will be of commercial interest during the life of the plan.¹²⁹

¹¹⁹ British Geological Survey (2007) *Mineral Planning Fact sheet: Brick Clay*, available from <http://www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html>, page 11.

¹²⁰ British Geological Survey (2007) *Mineral Planning Fact sheet: Brick Clay*, available from <http://www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html>, page 11.

¹²¹ British Geological Survey (2007) *Mineral Planning Fact sheet: Brick Clay*, available from <http://www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html>, page 11.

¹²² 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*.

¹²³ Brine was pumped in Tenbury Wells in the past.

¹²⁴ 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*.

¹²⁵ Tower Hill Pump in Droitwich.

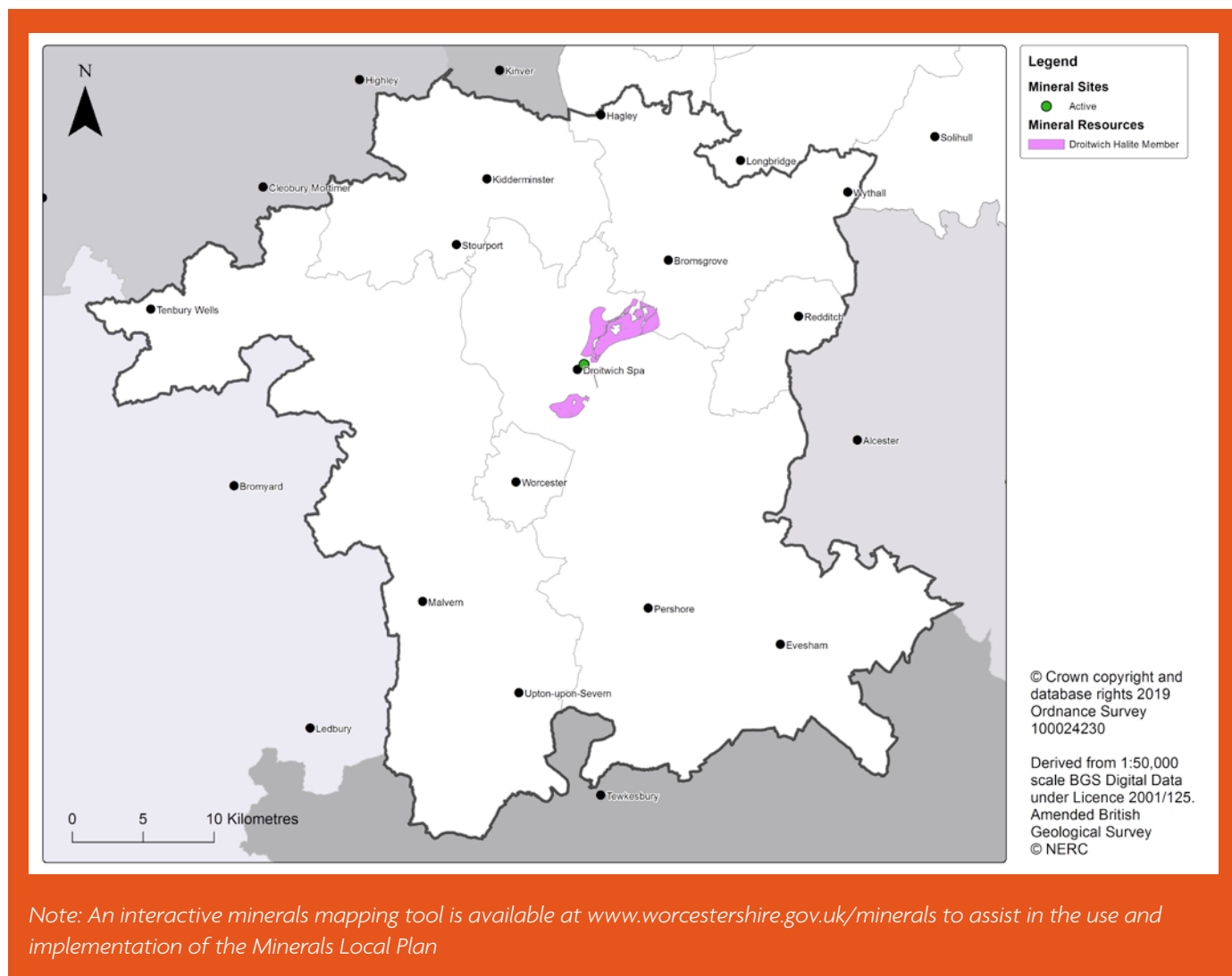
¹²⁶ There is outline planning approval for a development including a brine bath adjacent to Droitwich Spa lido (Wychavon District Council planning application reference 17/02092/OUT)

¹²⁷ Droitwich Salt has been harvested from brine at Churchfields Saltworks since 2017, <https://www.droitwichsalt.com>.

¹²⁸ Department for Communities and Local Government (February 2015) *Mineral extraction in Great Britain 2014: Business Monitor PA1007* (Table 12 – Other minerals).

¹²⁹ 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*.

Figure 2.8. Potential for salt and brine resources¹³⁰



Note: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals to assist in the use and implementation of the Minerals Local Plan

2.70 Although some brine is being extracted to supply small-scale commercial production of edible salt and is likely to supply a brine bath adjacent to Droitwich Spa lido,¹³¹ the extraction of brine has to be managed carefully because of the risk of subsidence. Significant increases in brine production are therefore unlikely. 70.2% of the Droitwich Halite Member is not affected by significant viability, environmental or amenity constraints.¹³²

Building stone¹³³

2.71 Local building stone contributes significantly to the character of some areas of Worcestershire. There are numerous examples of stone-built structures in Worcestershire: over 1,500 buildings in Worcestershire are recorded on the *Thousand Years of Building with Stone* project’s database.¹³⁴ In some cases 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.

¹³⁰ Figure 2.7. Potential for brick clay resources identifies the Droitwich Halite deposits after environmental and amenity screening criteria have been taken into account. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

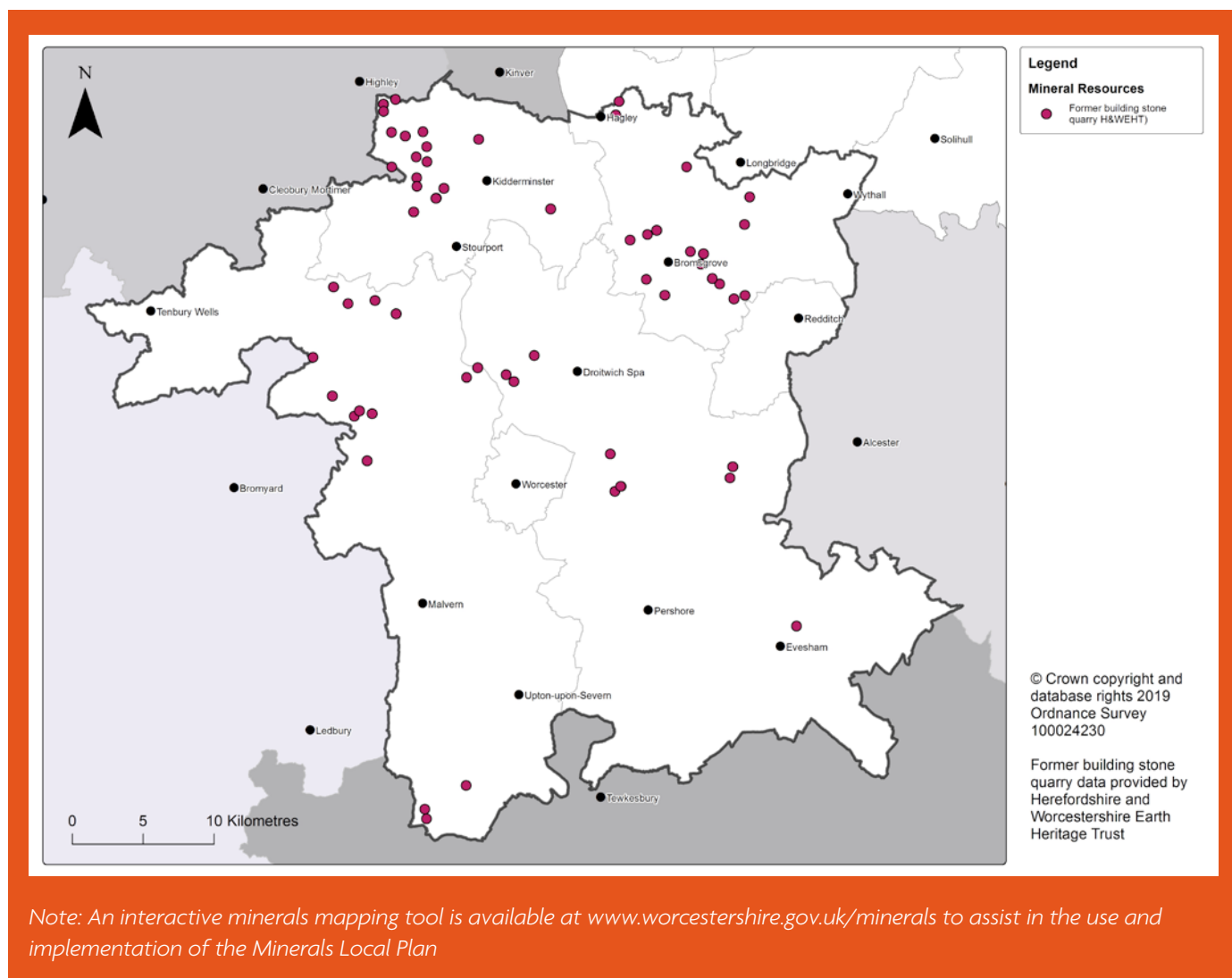
¹³¹ There is outline planning approval for a development including a brine bath adjacent to Droitwich Spa lido (Wychavon District Council planning application reference 17/02092/OUT).

¹³² By area (1,285 hectares of 1,830 hectares). For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

¹³³ For the purpose of this document, the term “building stone” incorporates building, walling, roofing and dimension stones.

¹³⁴ Herefordshire and Worcestershire Earth Heritage Trust, *A Thousand Years of Building with Stone* <http://www.buildingstones.org.uk/>. This data set includes stone structures listed in Pevsner’s *The Buildings of England – Worcestershire* and structures from seven cluster study areas within Worcestershire so is not comprehensive.

Figure 2.9. Potential for building stone resources¹³⁵



Note: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals to assist in the use and implementation of the Minerals Local Plan

2.72 Granite, limestone, sandstone, tufa, breccias and quartz and quartzite pebbles have been worked historically for use as building stone,¹³⁶ and 233 former building stone quarries have been identified in Worcestershire.¹³⁷ Whilst Worcestershire’s building stones were not widely exported for building construction, some good-quality locally sourced stone was used for high-status buildings such as churches, large houses and Worcester Cathedral from the middle ages and into the twentieth century. Locally sourced stone was widely used for construction of vernacular buildings.

Sales and production of building stone

2.73 Although a significant number of disused building stone quarries have been identified in the county,¹³⁸ there are currently no building stone workings or permitted reserves in Worcestershire.

Imports and exports

2.74 There is no specific information available about the demand for local building stone within Worcestershire or the amount of stone which is imported annually. 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 an acceptable match for the original stone.

¹³⁵ Figure 2.9. Potential for building stone resources identifies the former building stone quarries (identified by the Thousand Years of Building with Stone project) after environmental and amenity screening criteria have been taken into account. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

¹³⁶ English Heritage (2012) *Strategic Stone Study: A Building Stone Atlas of Worcestershire*.

¹³⁷ Herefordshire and Worcestershire Earth Heritage Trust, *A Thousand Years of Building with Stone* <http://www.buildingstones.org.uk/>.

¹³⁸ Herefordshire and Worcestershire Earth Heritage Trust, *A Thousand Years of Building with Stone* <http://www.buildingstones.org.uk/>.

Future building stone supply

- 2.75 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.¹³⁹
- 2.76 Nationally and locally, there are concerns amongst geologists and conservationists about ensuring the continued supply of natural local building stone for the restoration and repair of historic buildings. Specific conservation projects may call for particular types of stone and this may encourage building stone extraction in the county. If works to meet such a need were to become operational, the intermittent nature of demand for specific building stones may lead to workings lying dormant for some time.
- 2.77 26.6% of Worcestershire’s former building stone quarries (identified by the Thousand Years of Building with Stone project)¹⁴⁰ are not affected by significant viability, environmental or amenity constraints.¹⁴¹

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

- 2.78 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.¹⁴² 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.

- 2.79 The Malvern Hills Area of Outstanding Natural Beauty Partnership supports the re-use of local stone in the repair of historic buildings and to add character to new development in and around Malvern. It is helping to facilitate the recovery and storage of stone for this purpose where buildings or walls are demolished and where stone is excavated as part of building works.¹⁴³

Energy minerals

- 2.80 In Worcestershire there are two small areas where geological information suggests that coal may be present: a small area to the north of Bromsgrove lies at the southern end of the South Staffordshire Coalfield and another area to the north and west of Kidderminster lies at the southern end of the Wyre Forest Coalfield.¹⁴⁴ These coalfields extend beyond the north of the county. Former workings in parts of the Wyre Forest and Malvern Hills districts have left a legacy of mining features and hazards which are locally significant and may cause issues of land instability.
- 2.81 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 deposits remaining in the county constitute a “surface coal resource”¹⁴⁵ that is likely to attract further interest.¹⁴⁶
- 2.82 There is no evidence that conventional hydrocarbons (oil, natural gas or coalbed methane) or unconventional hydrocarbons (shale oil or gas, which may be accessed by hydraulic fracturing, or “fracking”) exist in Worcestershire. The county is not considered “prospective” for coalbed methane,¹⁴⁷ and 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. No blocks were licensed in or near to Worcestershire under the 14th Onshore Oil and Gas Licensing Round.¹⁴⁸

139 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.

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

141 By number (62 of 233 former quarries). For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

142 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.

143 Contact the Malvern Hills AONB Partnership for more information, <http://www.malvernhillsaonb.org.uk>.

144 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*.

145 Surface coal resource areas are where extraction of the coal can be carried out by surface mining methods. (Coal Authority (October 2014) *Safeguarding surface coal resources*).

146 Worcestershire County Council (September 2018) *Coal mining in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.

147 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*.

148 Information about the Onshore Oil and Gas Licencing Rounds is available at <https://www.ogauthority.co.uk/licensing-consents>.



Transporting sand and gravel on the River Severn

Imports and exports

2.83 There is no specific information available about the demand for energy minerals within Worcestershire or the amount of these which are imported annually. However, there are no commercial power stations which generate electricity for the grid in the county fuelled by coal or hydrocarbons which require the importation of energy minerals.

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

2.84 There are 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 and an energy from waste thermal treatment facility. However, the county's landlocked position and relatively limited renewable energy resources mean that it is unlikely to become a leading producer of renewable energy in the national context.¹⁴⁹

Worcestershire's transport network

2.85 Transporting minerals can have impacts on amenity, safety and capacity of transport networks, air quality, and climate change. Some minerals are only found in specific areas of the UK, or serve large market areas, and therefore may be transported long distances for use. This is reflected in the location of Worcestershire's current industrial mineral workings, which are either close to processing and manufacturing

facilities or close to the motorway network.

2.86 Aggregate minerals are bulky, relatively low-value materials that are expensive to transport and are not usually transported long distances from their source.¹⁵⁰ It is therefore important that aggregate workings are well located to serve planned housing and infrastructure development.

2.87 An understanding of current transport networks and constraints in Worcestershire is necessary to ensure that the Minerals Local Plan takes an appropriate approach to encouraging sustainable transport modes and focusing transport movements on the strategic transport network.

2.88 The county's strategic transport network, which includes waterways, rail and road, is shown on Figure 2.10. Strategic transport network.

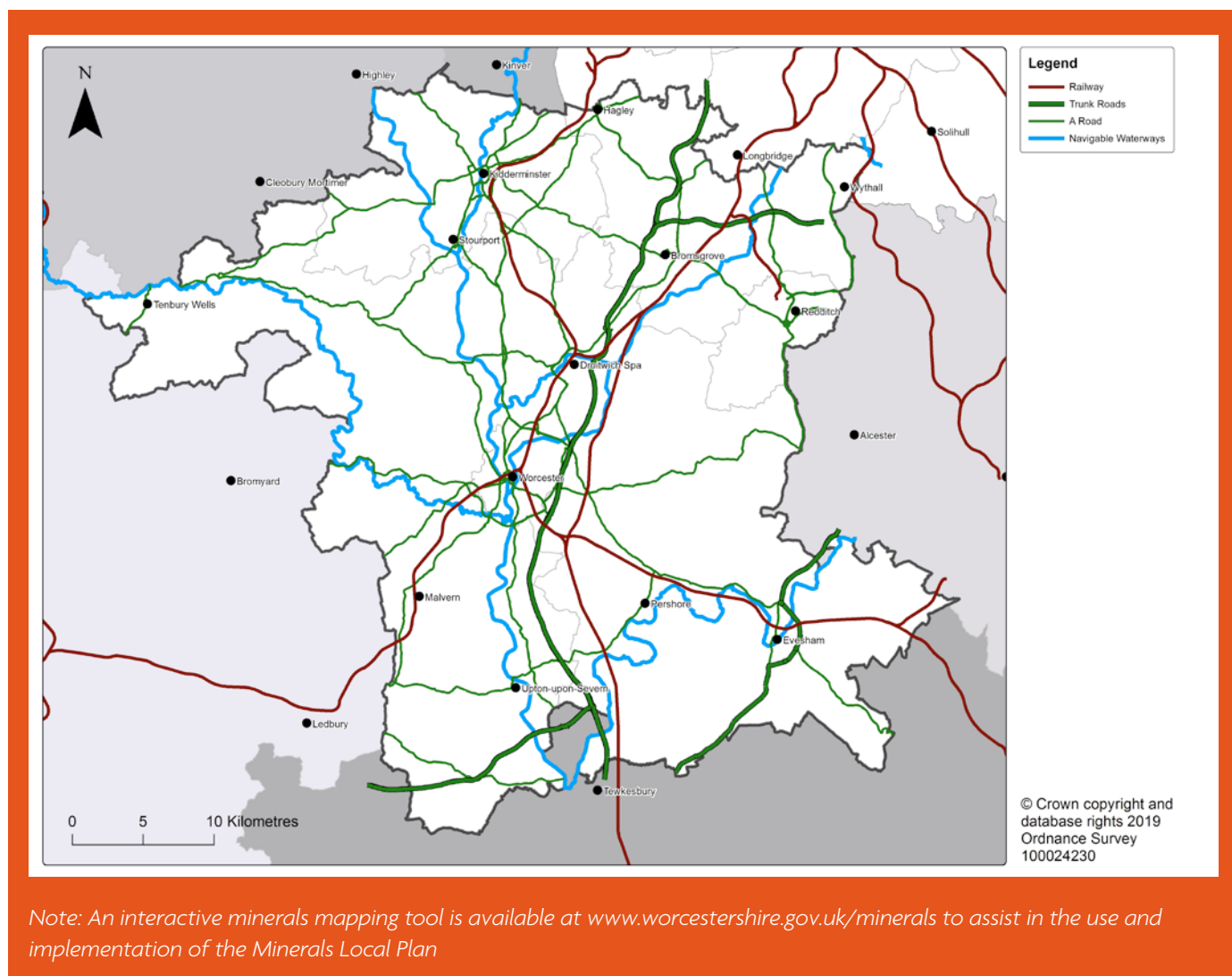
2.89 Securing a steady and adequate supply of minerals requires supporting infrastructure including storage, handling and transport facilities to facilitate both local distribution of materials and any imports and exports. There are currently no handling or processing facilities for the bulk transport of minerals by rail or inland waterway in Worcestershire. Any imports and exports are therefore solely reliant on the road network.

2.90 The scale and type of Worcestershire's resources and location within the strategic transport network mean it is unlikely that permanent facilities dedicated to the bulking of minerals will be developed, although there may be opportunities for smaller-scale water or rail transportation associated with specific workings.

¹⁴⁹ Worcestershire County Council (November 2015) *Renewable Energy Research Paper*.

¹⁵⁰ Aggregate minerals are typically only transported about 30 miles from their source. Mineral Products Association (2015) *Make the link: The mineral products industry's contribution to the UK*.

Figure 2.10. Strategic transport network



Water transport¹⁵¹

2.91 There is a network of navigable rivers and canals throughout Worcestershire (Figure 2.10. Strategic transport network). Transporting minerals by water produces considerably lower carbon emissions than road transport and can help to relieve road congestion. The use of inland waterways to transport minerals is, however, limited by the proximity of mineral resources to navigable waterways and by the capacity of specific waterways to accommodate different sizes of vessel. The number of locks on a waterway may also affect the viability of water transport due to the increased time and manpower required in their navigation. Wharfage facilities are also required for loading and unloading minerals.

2.92 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. The River 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. Sand and gravel was carried commercially on the River Severn between extraction at Ripple Quarry and the processing plant at Ryall House Farm Quarry in Worcestershire¹⁵² and has in the past been transported onwards into Gloucestershire. Planning permission has 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.¹⁵³ These are the only commercial wharfage facilities in Worcestershire.

¹⁵¹ Worcestershire County Council (September 2018) *Minerals Local Plan Background Document: Water Transport*, available at www.worcestershire.gov.uk/mineralsbackground.

¹⁵² See case study in Worcestershire County Council (September 2018) *Minerals Local Plan Background Document: Water Transport*, available at www.worcestershire.gov.uk/mineralsbackground.

¹⁵³ Planning application reference 15/000012/CM.

2.93 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 1972.¹⁵⁴ 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, although there are 17 locks on the Avon between Tewkesbury and Stratford-upon-Avon, and the size of the lock gates at Tewkesbury means that smaller vessels are required than those used on the River Severn.

2.94 The Worcester & Birmingham Canal runs from the River Severn in Worcester to Birmingham and is used for leisure craft.¹⁵⁵ The Staffordshire & Worcestershire Canal links the River Severn at Stourport-on-Severn with towns to the north, and was historically used to carry coal from Cannock to Stourport power station, but this traffic ceased in 1949.¹⁵⁶

2.95 The Droitwich Barge Canal and Droitwich Junction Canal were built to carry salt. Abandoned in 1939, they were restored and reopened in 2010 and 2011 respectively and are now used for leisure craft.¹⁵⁷

Rail transport¹⁵⁸

2.96 Rail freight has traditionally carried heavy, bulky goods and construction materials, including aggregates and minerals. Each tonne of freight (including aggregates) transported by rail reduces carbon emissions by 76% compared to road transport, and each freight train removes 43 to 76 lorries from the roads.¹⁵⁹

2.97 Strategic rail networks within Worcestershire provide links to the north and south of the country, and Worcestershire is well-served by passenger rail with most of the main towns connected to the rail network. However, of the 94 miles of railway in the county, 29.5 miles are single track, which restricts capacity, complicates timetabling, and affects reliability. Network Rail is

considering addressing the capacity restrictions caused by single line sections and outdated signalling systems in the county, but with no committed timescales.¹⁶⁰

2.98 There are no major rail freight facilities and no mineral sites with rail connections in Worcestershire, and opportunities for rail freight transport are limited at present. The development of new railheads would require a sizeable, long-term mineral working to warrant the investment in new infrastructure, which is unlikely in Worcestershire.

Road transport¹⁶¹

2.99 The county is well connected to the strategic road network (Figure 2.10. Strategic transport 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 urban centres in the county and provide access to the motorway network, towns and cities in surrounding counties, and residential and industrial areas.

2.100 The Worcestershire Advisory Lorry Route Map¹⁶² indicates the best available routes for heavy goods vehicles in Worcestershire, encouraging use of routes which avoid environmentally sensitive areas and bridges with restricted safe clearance, and minimise conflict with local residents and impacts on Air Quality Management Areas (AQMAs). An increasing number of HGVs is recognised as a particular problem in the Vale of Evesham.¹⁶³

2.101 The majority of mineral movements in Worcestershire are by road, and even where minerals themselves could be transported by waterway or rail, good access to the strategic road network is likely to be required for staff and visitors and transporting any plant to and from sites.

¹⁵⁴ Email from Clive Matthews, General Manager, Avon Navigation Trust, 06/01/2014.

¹⁵⁵ The Canal and River Trust website states that "The last commercial traffics [on the canal] were coal from Cannock to Worcester and chocolate crumb from Worcester to Bournville, ceasing in 1960 and 1961 respectively" (<https://canalrivertrust.org.uk/enjoy-the-waterways/canal-and-river-network/worcester-and-birmingham-canal>).

¹⁵⁶ Canal & River Trust, *Staffordshire & Worcestershire Canal*, <https://canalrivertrust.org.uk/enjoy-the-waterways/canal-and-river-network/staffordshire-andworcestershire-canal>.

¹⁵⁷ For further information see <https://canalrivertrust.org.uk/enjoy-the-waterways/canal-and-river-network/droitwich-canal>.

¹⁵⁸ Worcestershire County Council, (September 2018), *Worcestershire Minerals Local Plan Background Document: Rail Freight*, available at www.worcestershire.gov.uk/mineralsbackground.

¹⁵⁹ Department for Transport (September 2016) *Rail Freight Strategy*.

¹⁶⁰ Worcestershire County Council (Autumn 2017) *Worcestershire Rail Investment Strategy: Supporting Development of Worcestershire's Local Transport Plan 4*.

¹⁶¹ Worcestershire County Council, *Worcestershire's Local Transport Plan (LTP) 2018-2030*, <http://www.worcestershire.gov.uk/ltp4>.

¹⁶² Worcestershire Advisory Lorry Route Map, http://www.worcestershire.gov.uk/info/20007/travel_and_roads/1003/freight/2

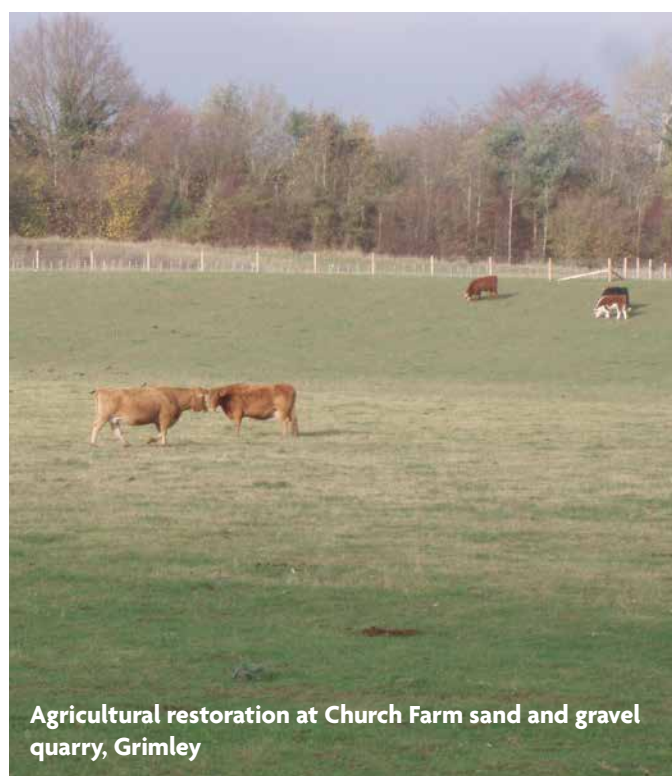
¹⁶³ South Worcestershire Councils (2016) *South Worcestershire Development Plan*. The reasoned justification supporting policy SWDP11 states that the "increased level of HGV traffic [in the Vale] has affected the quality of life of residents through the generation of increased noise, vibration, pollution and other adverse impacts".

Worcestershire's economy

- 2.102 Mineral development is essential to supporting economic growth and development of housing and infrastructure. It has the potential to both positively and negatively affect different economic sectors. It is therefore important to understand the character and performance of the local economy and, in particular, those sectors most likely to impact on and be impacted by minerals development.
- 2.103 Worcestershire has a highly diversified economy, and is home to a wide range of businesses. Existing industry strengths in advanced engineering and manufacturing, cyber security and defence, agri-tech and associated energy technologies¹⁶⁴ are identified as growth sectors alongside the visitor and destination economy.¹⁶⁵
- 2.104 Effective planning and management of minerals development is needed to ensure that impacts on transport networks and the character of the area do not lead to indirect economic impacts. Maintaining and enhancing the county's high-quality environment can help to attract and retain people visiting, working and investing in the county.¹⁶⁶
- 2.105 Agri-tech, horticulture and food production are strong economic sectors in Worcestershire due to high-quality soils¹⁶⁷ and the county's central location, and there has been a high level of investment in commercial glasshouses in recent years. Water abstraction and water resource management are important issues for this sector.¹⁶⁸ There is a significant cross-over between the location of mineral resources and high-quality agricultural land,¹⁶⁹ particularly the terrace sand and gravel deposits in the county's river valleys and Mercia Mudstone deposits which occur extensively across Worcestershire. Change of land use for minerals development and subsequent restoration could result in some areas of land being temporarily or permanently taken out of agricultural use, although agriculture may benefit in the longer term if restoration schemes improve management of water resources or enhance ecosystem services.

Worcestershire's environment

- 2.106 The county is rich in high-quality environmental assets. 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.
- 2.107 In Worcestershire, there is a strong relationship between the location of mineral resources and the environmental character of the areas 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 found in the area. 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 and has been used.
- 2.108 It is important to understand each of these components in their own right and how they contribute towards multifunctional networks of green infrastructure.



Agricultural restoration at Church Farm sand and gravel quarry, Grimley

¹⁶⁴ Worcestershire Local Enterprise Partnership (2014) *Worcestershire Strategic Economic Plan*.

¹⁶⁵ Worcestershire Local Enterprise Partnership, *Growth Sectors*, <https://www.wlep.co.uk/about-wlep/growth-sectors/>.

¹⁶⁶ Worcestershire Local Enterprise Partnership, *Environmental Sustainability*, <https://www.wlep.co.uk/about-wlep/environmental-sustainability>.

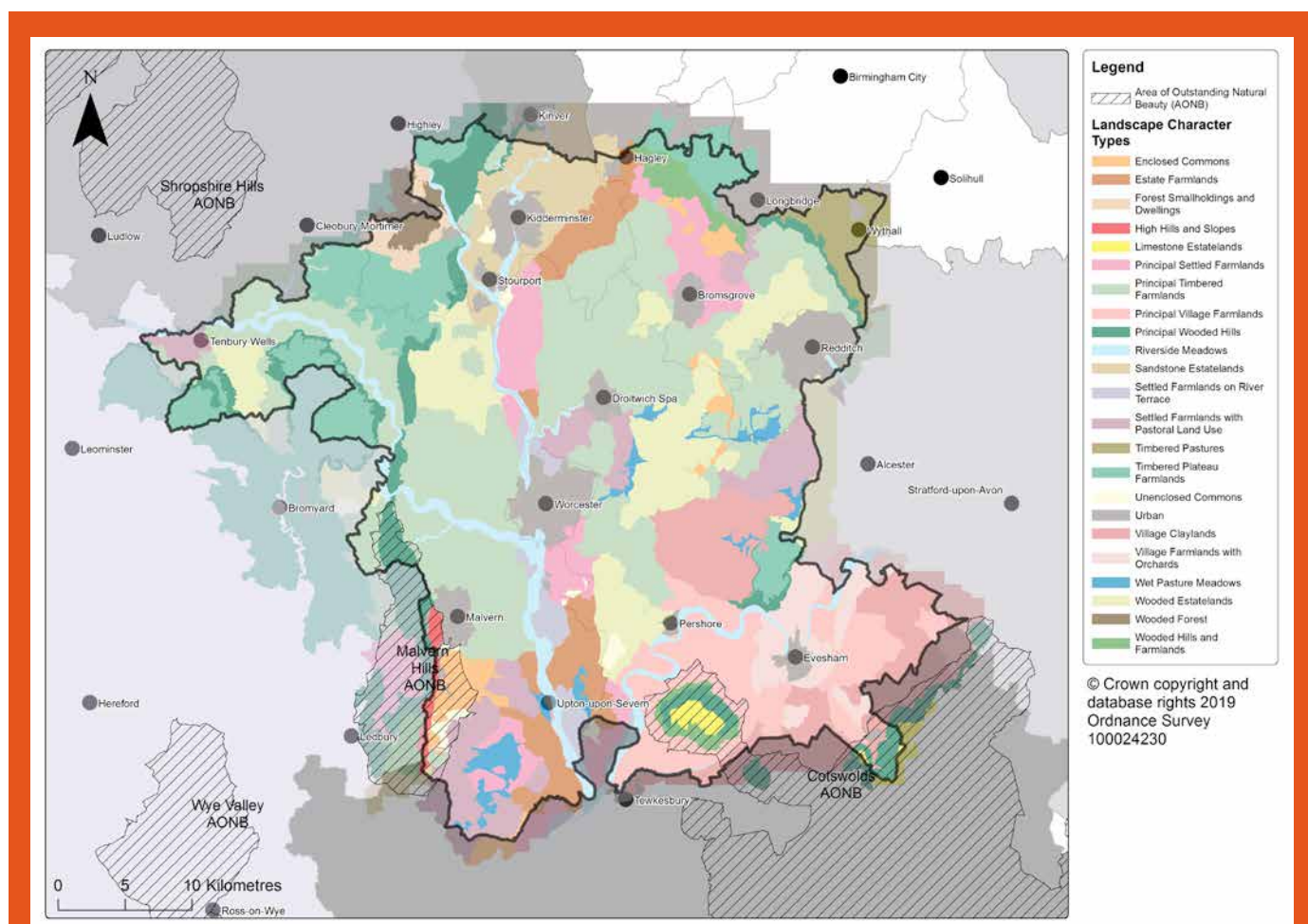
¹⁶⁷ Worcestershire County Council (December 2011) *Technical Research Paper: Planning for Soils in Worcestershire*.

¹⁶⁸ The Worcestershire Partnership (2012) *Worcestershire Climate Change Strategy 2012 – 2020: A Framework for securing a low carbon & climate resilient County*.

¹⁶⁹ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework* defines best and most versatile agricultural land as grades 1, 2 and 3a of the Agricultural Land Classification.

Landscape character and local distinctiveness

Figure 2.11. Landscape character and Areas of Outstanding Natural Beauty



Note: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals to assist in the use and implementation of the Minerals Local Plan

2.109 Landscape is the physical and visual manifestation of the interrelationship between man’s activities and the natural environment. These are dynamic forces, forever changing the character of the landscape.¹⁷⁰ Worcestershire’s landscape is one of the most diverse in Britain, with six National Character Areas¹⁷¹ and 22 significantly different Landscape Types.¹⁷² The county’s landscape 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 distinctive river valleys. These landscapes closely reflect the underlying rich and diverse geology.

2.110 Parts of two Areas of Outstanding Natural Beauty (AONB) are within Worcestershire: the Malvern Hills AONB¹⁷³ which extends into Herefordshire and a small part of Gloucestershire; and the western extremity of the extensive Cotswolds AONB,¹⁷⁴ stretching across Bredon Hill and the Cotswold scarp beyond Broadway. Together these AONB designations cover 9% of the county and national protection is afforded to their landscape and scenic beauty. The AONBs are closely associated with the granite and limestone rocks in the county.

¹⁷⁰ Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance*. www.worcestershire.gov.uk/lca.

¹⁷¹ National Character Areas are areas that share similar landscape characteristics, and which follow natural lines in the landscape rather than administrative boundaries. The six National Character Areas covering Worcestershire are the Severn & Avon Vales, Teme Valley, Mid Severn Sandstone Plateau, Malvern Hills, Arden, and Cotswolds. National Character Area profiles are available at <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles>.

¹⁷² Worcestershire County Council (2012) *Landscape Character Assessment Supplementary Guidance*. www.worcestershire.gov.uk/lca.

¹⁷³ <http://www.malvernhillsaonb.org.uk/>

¹⁷⁴ <https://www.cotswoldsaonb.org.uk/>

- 2.111 Half of Worcestershire’s entire land area has undergone some kind of landscape character change since 1945 as a result of changes in land use, land management practices and built development.¹⁷⁵ In the past, mineral development has resulted in changes to landscape character, both temporary whilst a site is working and permanent changes such as changes to field boundaries and the introduction of lakes and ponds into a previously agricultural landscape.
- 2.112 Piecemeal change to the landscape as a result of mineral development could weaken local distinctiveness and undermine the character of the landscape. Planning the location, working and restoration of mineral sites at a landscape-scale can bring opportunities to strengthen key landscape characteristics, connectivity and legibility, such as by re-instating or strengthening hedgerow and field patterns or typical land-uses, or strengthening associations between views and key receptors. Managing any changes resulting from mineral working within this context can ensure that mineral working and restoration is sensitive to the local landscape and that schemes across different sites in an area will be cohesive rather than fragmented. Ensuring that high-quality restoration takes place at the earliest opportunity can also help to limit the timescale of any negative impacts on the landscape and ensure any benefits are delivered as quickly as possible.

Biodiversity

- 2.113 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, 103 biological Sites of Special Scientific Interest (SSSI),¹⁷⁶ and over 560 Local Wildlife Sites in the county, which collectively cover approximately 5% of the county.¹⁷⁷ Worcestershire’s Biodiversity Action Plan (BAP)¹⁷⁸ includes 17 different habitats and 24 species

action plans including traditional orchards, woodlands and grassland. Worcestershire has over 20% of the UK’s remaining unimproved neutral grassland habitat.¹⁷⁹

- 2.114 There are localised areas where SSSIs are in poor condition and, whilst some of the BAP habitats are well connected, others are fragmented. Worcestershire Biodiversity Partnership and Local Nature Partnership have identified five Biodiversity Delivery Areas¹⁸⁰ across the county where targets within the Biodiversity Action Plan can be best delivered in the short term.
- 2.115 Mineral workings and their restoration can create significant opportunities for new habitats, sites and features of nature conservation value¹⁸¹ although they also have the potential to destroy or degrade some habitats. It is estimated¹⁸² that mineral sites nationally have the potential to deliver all the existing UK BAP habitat creation targets for nine¹⁸³ priority habitats. They can create habitats that are more resilient to climate change and can aid species dispersal by helping to buffer, extend or create links between existing habitats.¹⁸⁴
- 2.116 The balance of biodiversity benefits from mineral development will depend on the quality of the existing habitats and any that could be created. By viewing and designing mineral sites as part of a landscape-scale corridor, opportunities for net gains for biodiversity can be optimised by protecting, enhancing and creating coherent ecological networks that are more resilient to current and future pressures and provide a range of services for wildlife.¹⁸⁵ Delivering gains for biodiversity during working phases, and ensuring high-quality restoration takes place at the earliest opportunity, can help to ensure that biodiversity net-gains are delivered throughout the life of a site.

¹⁷⁵ Worcestershire County Council (2012) *Worcestershire Historic Landscape Characterisation*.

¹⁷⁶ Of the 113 SSSIs in Worcestershire, 99 are biological SSSIs, 10 are geological, and four are both biological and geological. They cover a combined area of over 5,300ha.

¹⁷⁷ 8,600ha.

¹⁷⁸ Worcestershire Biodiversity Partnership (2008) *Biodiversity Action Plan for Worcestershire*.

¹⁷⁹ Estimated to be just 7282ha by Rodwell et al in 2007 (in Worcestershire Biodiversity Partnership (2008) *Biodiversity Action Plan for Worcestershire*).

¹⁸⁰ 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.

¹⁸¹ Worcestershire County Council (2013) *Biodiversity and mineral sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*, available at www.worcestershire.gov.uk/mineralsbackground.

¹⁸² RSPB (2006) *Nature After Minerals: How mineral site restoration can benefit people and wildlife*.

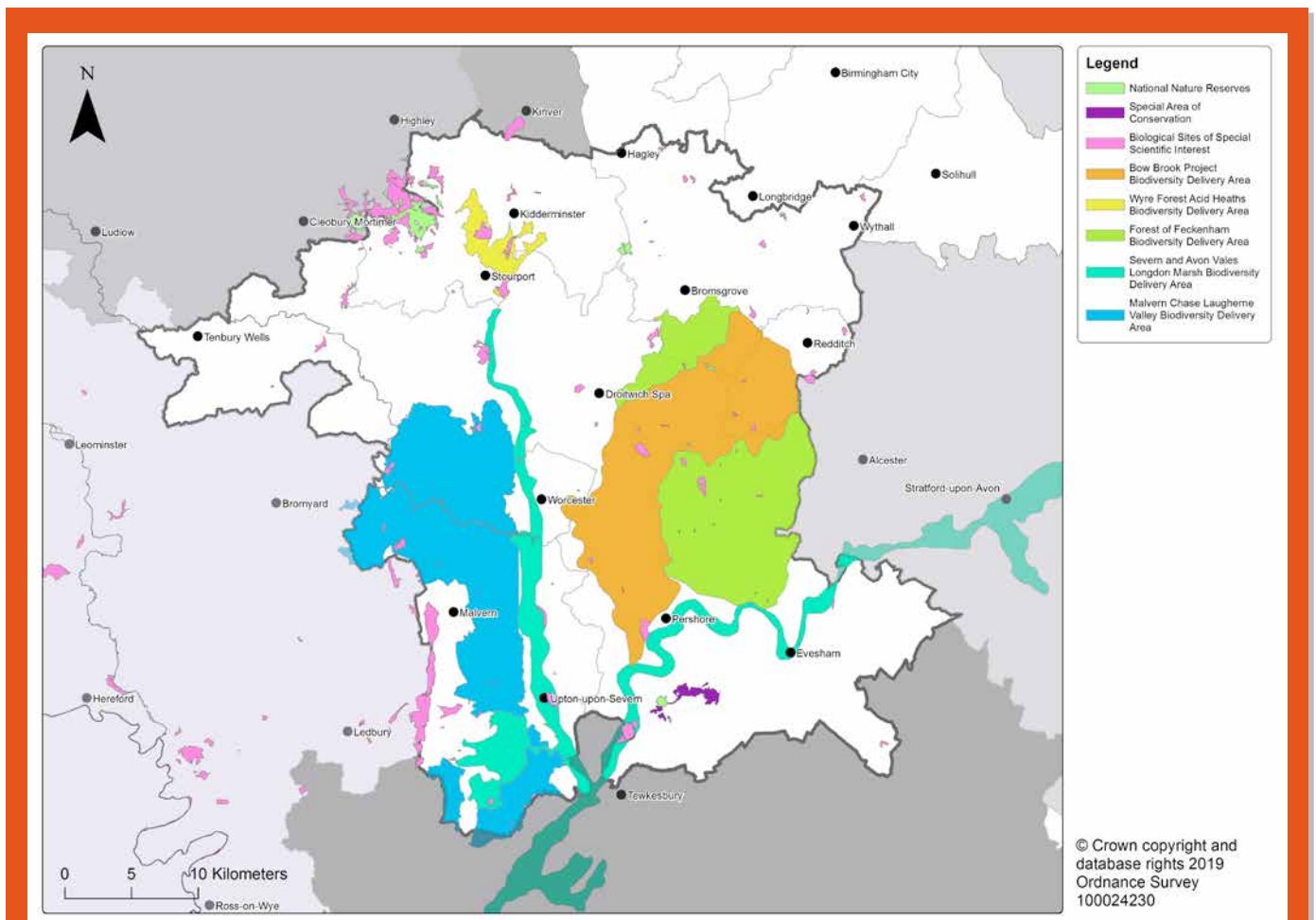
¹⁸³ Lowland acid grassland, Native Woodland, Wood pasture and parkland, Lowland calcareous grassland, lowland heathland, Purple moor grass and rush pasture, Wet reedbeds, Lowland meadows, Upland hay meadows.

¹⁸⁴ *Making Space for Nature: A review of England’s Wildlife Sites and Ecological Network*, chaired by Professor Sir John Lawton CBE FRS.

¹⁸⁵ An ecological network is a network of habitats and features which provide ecological functionality for particular, or a range of, flora and fauna. Ecological functionality means the network has both structural and functional connectivity which provides a range of services for wildlife, including opportunities to rest, shelter, forage, breed, over-winter, disperse and exchange genetic information between populations.



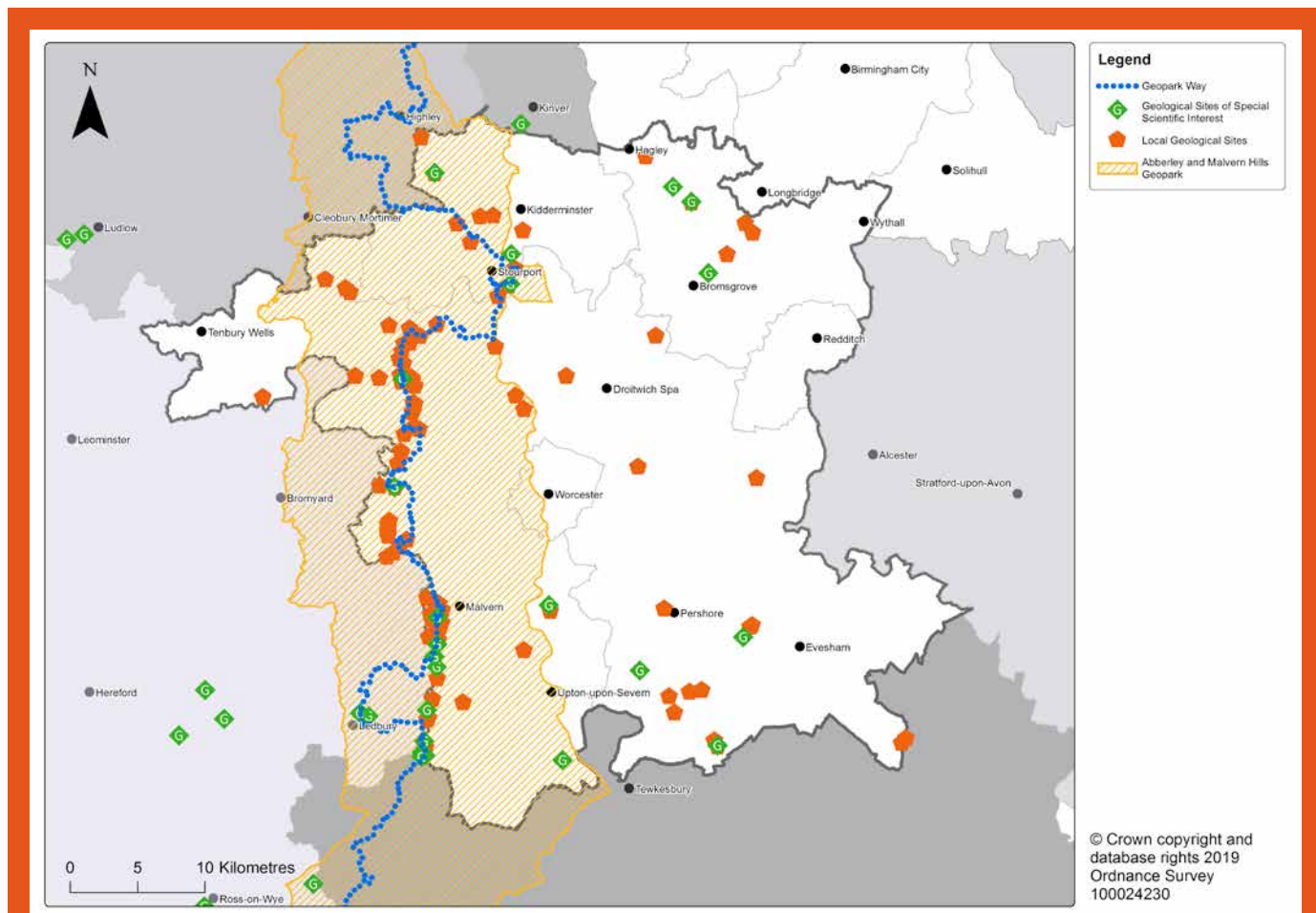
Figure 2.12. Biodiversity in Worcestershire



Note: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals to assist in the use and implementation of the Minerals Local Plan

Geodiversity

Figure 2.13. Geodiversity assets



Note: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals to assist in the use and implementation of the Minerals Local Plan

2.117 The geology of Worcestershire is rich and diverse. It has both the oldest rocks in England, in the Malvern Hills, and also represents eight of the twelve subsequent geological periods, culminating in the Quaternary formations created during recent glacial and interglacial times. These formations include the internationally important river terraces of the Severn and Avon.¹⁸⁶

2.118 There are 14 geological SSSIs¹⁸⁷ and more than 90 Local Geological Sites in Worcestershire. The Abberley and Malvern Hills Geopark, which covers over 480 square miles, 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.¹⁸⁸

2.119 It is often difficult to predict where important geological features might occur, and in the past sand and gravel sites were exploited without their significance for geodiversity being documented. Mineral working can destroy geological or geomorphological features, but also offers opportunities to create exposures and 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. Sand and gravel working in the terraces of rivers Severn and Avon has the potential to reveal information about the river patterns and environments in which they were formed, as well as the dates they were formed, and have proven to be a rich source of fossils.¹⁸⁹

186 Bridgland, D. R. (2010) *The record from British Quaternary river systems within the context of global fluvial archives*, J. Quaternary Sci., Vol. 25 pp. 433-446.

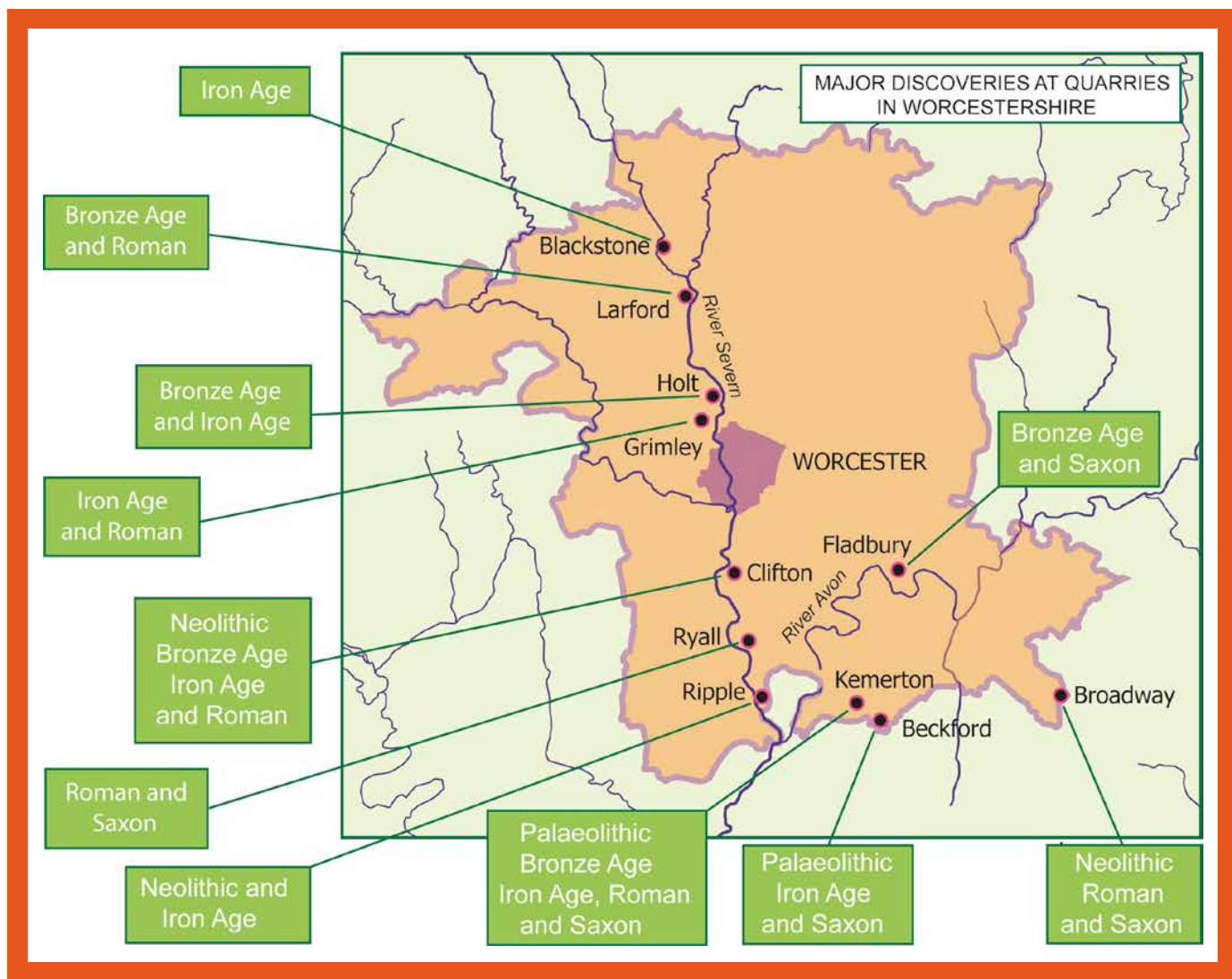
187 Of the 113 SSSIs in Worcestershire, 99 are biological SSSIs, 10 are geological, and four are both biological and geological.

188 An exact boundary for the Cotswold Hills Geopark was not available for inclusion in Figure 2.13, but information about the geopark can be found online at <http://www.cotswoldhillsgeopark.net>.

189 For example, extensive finds occurred around 1960 at Upton Warren (Coope, G.R., Shotton, F.W., Strachan, I., (1961) *A Late Pleistocene fauna and flora from Upton Warren, Worcestershire*, Philosophical Transactions of the Royal Society of London, B244, 379-421) and mammoth remains were discovered in 2016 at Clifton (Lovett, P., (2017) *Archaeological investigations 2012-2016 at Clifton Quarry, Kempsey, Worcestershire*. Worcestershire Archaeology (Archive and Archaeology Service)).

Historic environment

Figure 2.14. Major discoveries at mineral workings in Worcestershire¹⁹⁰



2.120 The county has a diverse and rich historic environment. There are 135 Conservation Areas, over 7,000 Listed Buildings and 176 Scheduled Monuments in the county and over 70,000 heritage assets¹⁹¹ are recorded on the county's Historic Environment Record.¹⁹² The Historic Environment Record represents all aspects of Worcestershire's archaeology and historic environment, including archaeological sites, historic buildings, monuments and landscape features.

2.121 The county's river valleys have provided a focus for settlement for over 6,000 years, and 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. These areas are also where much of the county's terrace and glacial sand and gravel resources occur. These deposits often contain artefacts of Palaeolithic date, as well as faunal and environmental remains that provide context for, and aid understanding of the artefacts.

¹⁹⁰ Source: Worcestershire County Council (2009) *Unlocking the past: The story of Worcestershire's archaeology revealed through quarrying*, <http://www.worcestershire.gov.uk/archaeology>.

¹⁹¹ Consisting of nearly 45,000 monument records which include designated and non-designated heritage assets, as well as approximately 24,000 source records and around 8,000 event records.

¹⁹² At the point of preparing the Minerals Local Plan, 2018.

2.122 Worcestershire remains a largely rural county which is reflected in its diverse rural historic environment. There are prehistoric hill forts on many of the county’s hills and areas of 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,¹⁹³ medieval and industrial assets. In addition there are several designed landscapes including parks, both private (e.g. Croome Park) and public (e.g. Priory Park in Malvern). As well as landscape interest, these heritage assets have significant architectural and archaeological interest and often contain other monuments and memorials.

2.123 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.¹⁹⁴

2.124 Mineral working has the potential to impact heritage assets and their settings, and in particular could destroy archaeological features. Mineral workings can both positively and negatively affect the setting of heritage assets, including views to, from or between them. As mineral working can affect large areas, it can offer significant opportunities for archaeological investigation, and the enhancement of our understanding of heritage assets and their settings. Significant discoveries have been made at Worcestershire’s mineral workings (Figure 2.14. Major discoveries at mineral workings in Worcestershire), and care needs to be taken to protect, conserve and enhance important features.

2.125 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.

Water environment

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

Flooding

2.127 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 when the sewer network cannot cope with the volume of water entering it, particularly at times of heavy rainfall.

2.128 The majority of flood events in recent years have been caused by intense rainfall leading to surface water run-off and ordinary watercourse flooding.¹⁹⁵

¹⁹³ Wyre Forest Landscape partnership, *Wyre Forest Management Strategy: Consultation draft 2014-2025*, http://www.wflp.org.uk/assets/uploads/downloads/a6ed9-WYRE_DRAFT_STRATEGY_v11.pdf.

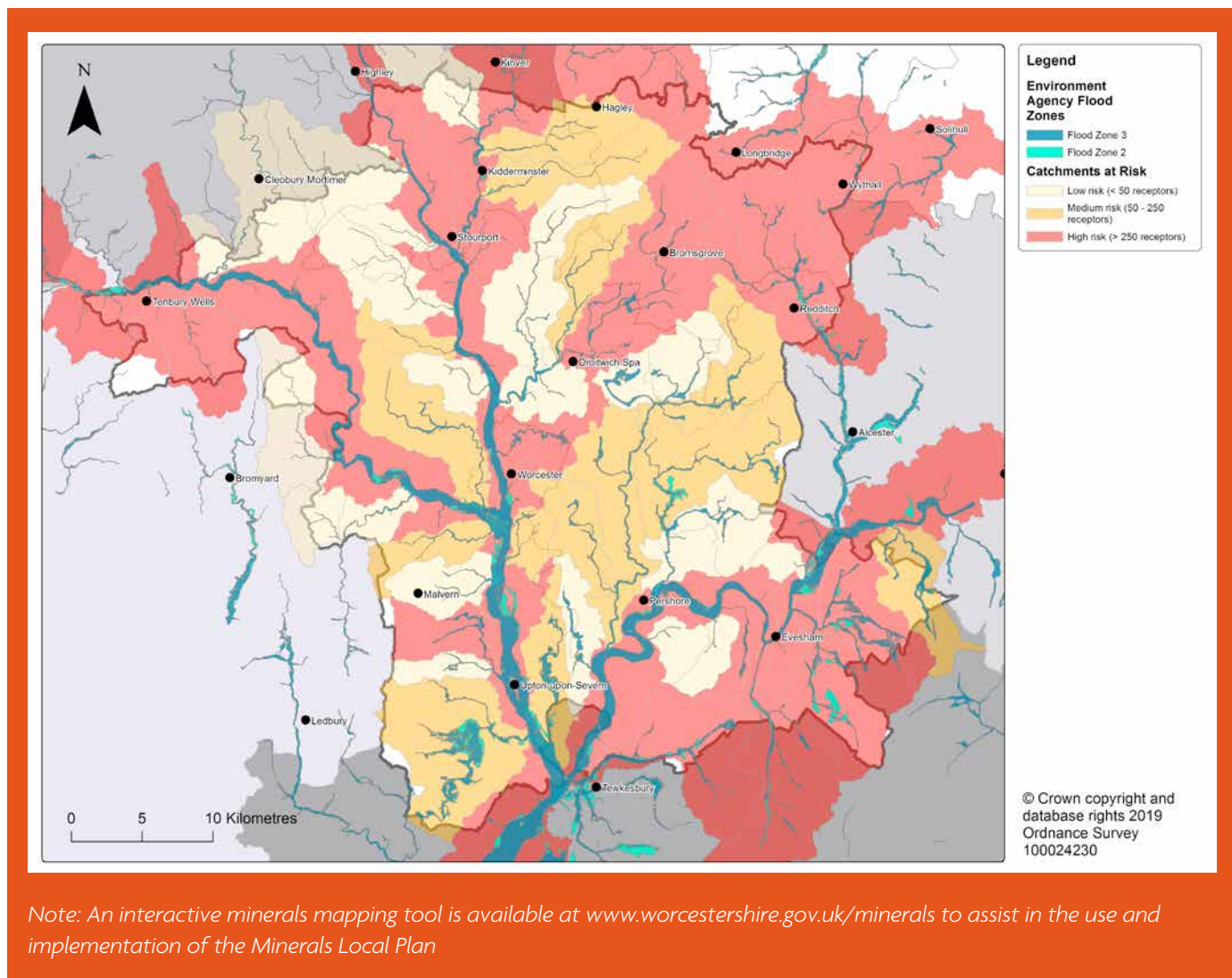
¹⁹⁴ Historic England (April 2015) *Facing the Future: Foresight and the Historic Environment* (Paragraph 3.4.6).

¹⁹⁵ Worcestershire County Council (March 2016) *Worcestershire Local Flood Risk Management Strategy 2015-2021*.

2.129 Climate change can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability. Wetter winters and more rain falling in wet spells may increase river flooding along the River Severn and its tributaries. More intense rainfall causes more surface run-off, 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 through an increase in storm events.¹⁹⁶

2.130 Water catchments represent a whole system of interlinked watercourses and flow pathways. Interventions, such as new development, in a part of a catchment can therefore have direct impacts in other parts of the catchment.¹⁹⁷ Mineral working and site restoration provide opportunities to reinstate natural flooding processes, and provide space for flood attenuation, although care also needs to be taken to ensure that sites are designed to prevent any increase in flood risk elsewhere. By viewing individual sites within their wider catchment, opportunities for flood risk betterment can be optimised throughout the life of a mineral development.

Figure 2.15. Flood risk in Worcestershire¹⁹⁸



Note: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals to assist in the use and implementation of the Minerals Local Plan

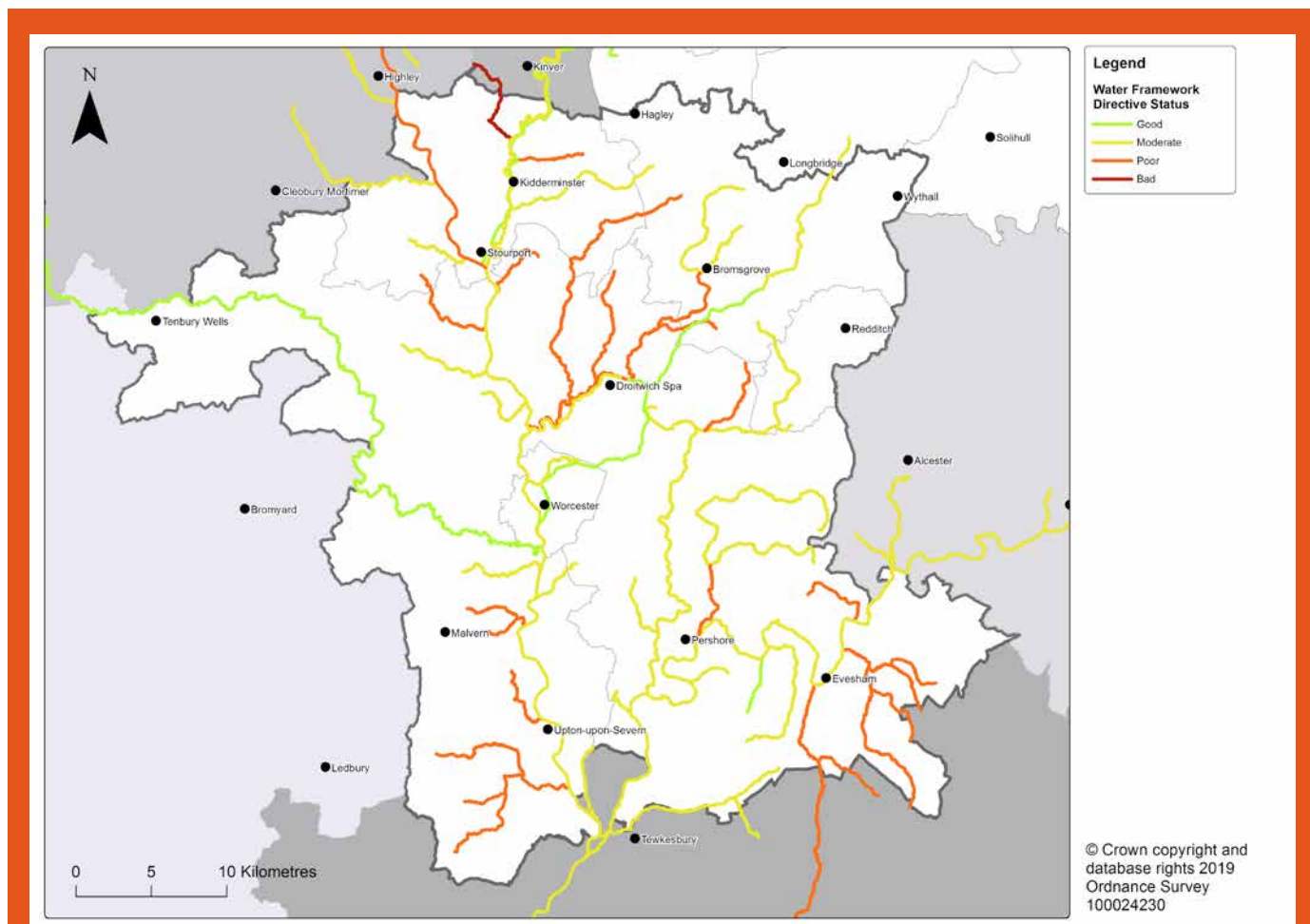
196 Worcestershire County Council (March 2016) *Worcestershire Local Flood Risk Management Strategy 2015-2021*.

197 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*.

198 Catchments at risk based on the number of receptors (residential properties, non-residential properties and key infrastructure) to identify where there are particular clusters of known flood incidents or future modelled risk from all sources of flooding. Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

Water quality and quantity

Figure 2.16. Water quality in Worcestershire¹⁹⁹

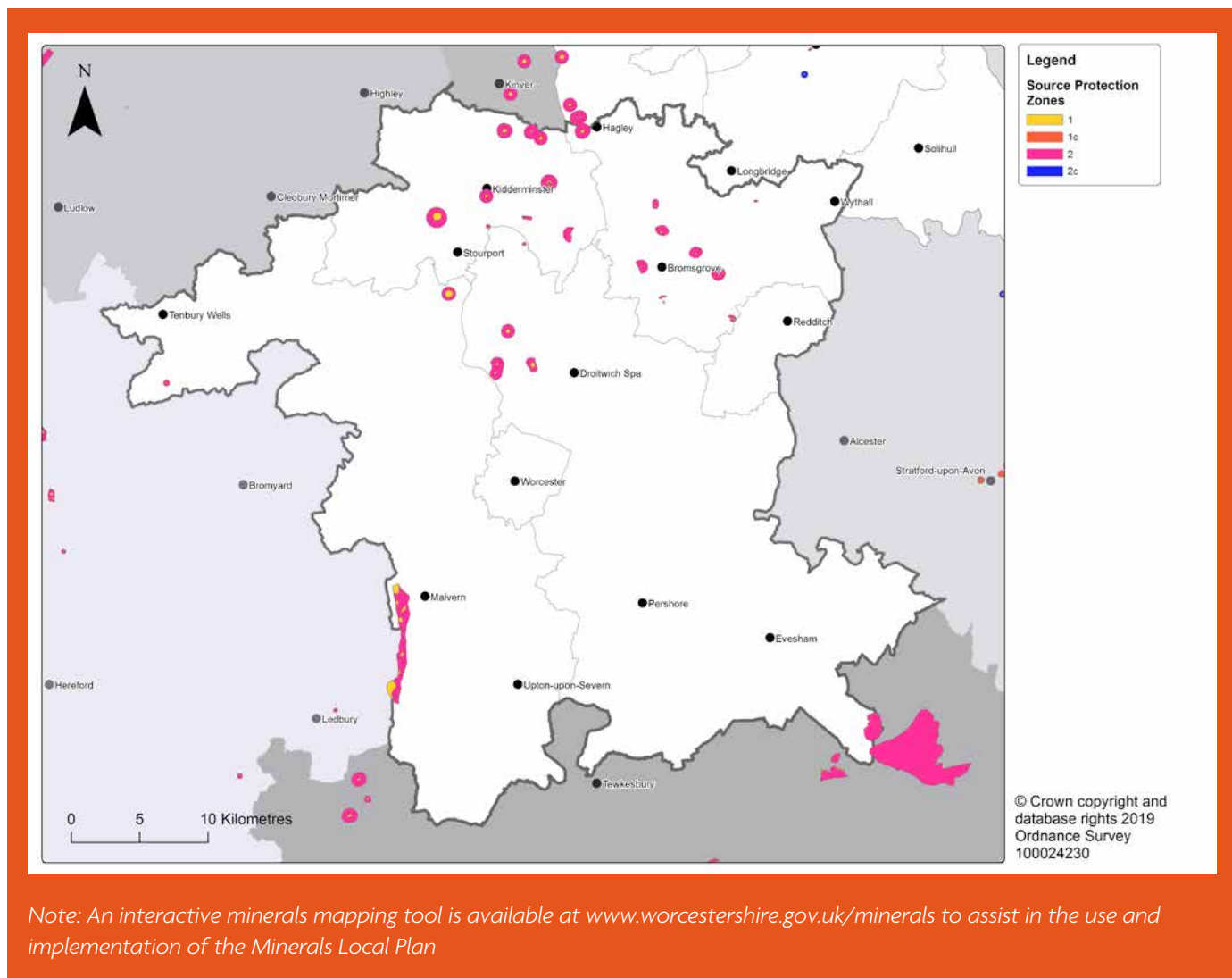


Note: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals to assist in the use and implementation of the Minerals Local Plan

- 2.131 Worcestershire suffers from significant water quality issues (Figure 2.16). 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.
- 2.132 The EU Water Framework Directive (WFD) requires all surface and ground waters to reach “good ecological” status (or potential, in the case of Artificial or Heavily Modified Waterbodies) by 2027.²⁰⁰ Most of Worcestershire’s waterbodies are not currently meeting this requirement.²⁰¹
- 2.133 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.²⁰²

199 Water Framework Directive Status data provided by the Environment Agency, summer 2018. The latest Environment Agency data should be referred to, see <https://environment.data.gov.uk/catchment-planning/>.
 200 In some cases the action required to meet good status or potential for some surface and ground waters is not technically feasible or is of disproportionate cost. These will have an alternative objective set through the River Basin Management Planning process.
 201 The Environment Agency’s *Catchment Data Explorer* tool can be used to explore and download information about the water environment. It supports and builds upon the data in the river basin management plans, and can be accessed at <http://environment.data.gov.uk/catchment-planning/>.
 202 Worcestershire County Council (2016) *Worcestershire Minerals Local Plan Surface and Ground Water Protection Issues, including Flood Risk Assessment of Submitted Sites*.

Figure 2.17. Source Protection Zones



2.134 A significant shortfall of water supply is predicted for the period between 2014 and 2035 as aquifers are under pressure in many areas of the county, including in Kidderminster and in Bromsgrove district. This is due to greater demand for water as a result of increased development and population growth, agricultural use, and/or intensification of activities.²⁰³

2.135 As well as providing base flows to watercourses and water bodies, groundwater provides a significant proportion (30%) of the public water supply in England.²⁰⁴ Worcestershire has several important principal aquifers within the bedrock solid sand deposits which are used for strategic public drinking water supplies, and secondary aquifers occur elsewhere within the bedrock geology of Worcestershire and within the superficial sand and gravel deposits of the river valleys.²⁰⁵ Source Protection Zones are defined by the Environment Agency for groundwater sources such as wells, boreholes and springs used for public drinking water supply to show the risk of contamination from any activities that might cause pollution in the area (Figure 2.17). The closer the activity, the greater the risk.

203 Worcestershire County Council (2011) *Planning for Water in Worcestershire: Technical Research Paper*.

204 Based on 2014 Water Resources Management Plans. See British Geological Survey webpage *Current UK groundwater use*, at <https://www.bgs.ac.uk/research/groundwater/waterResources/GroundwaterInUK/2015.html>.

205 Aquifer designations can be viewed at <https://magic.defra.gov.uk/MagicMap.aspx> under landscape > Geology and soils.



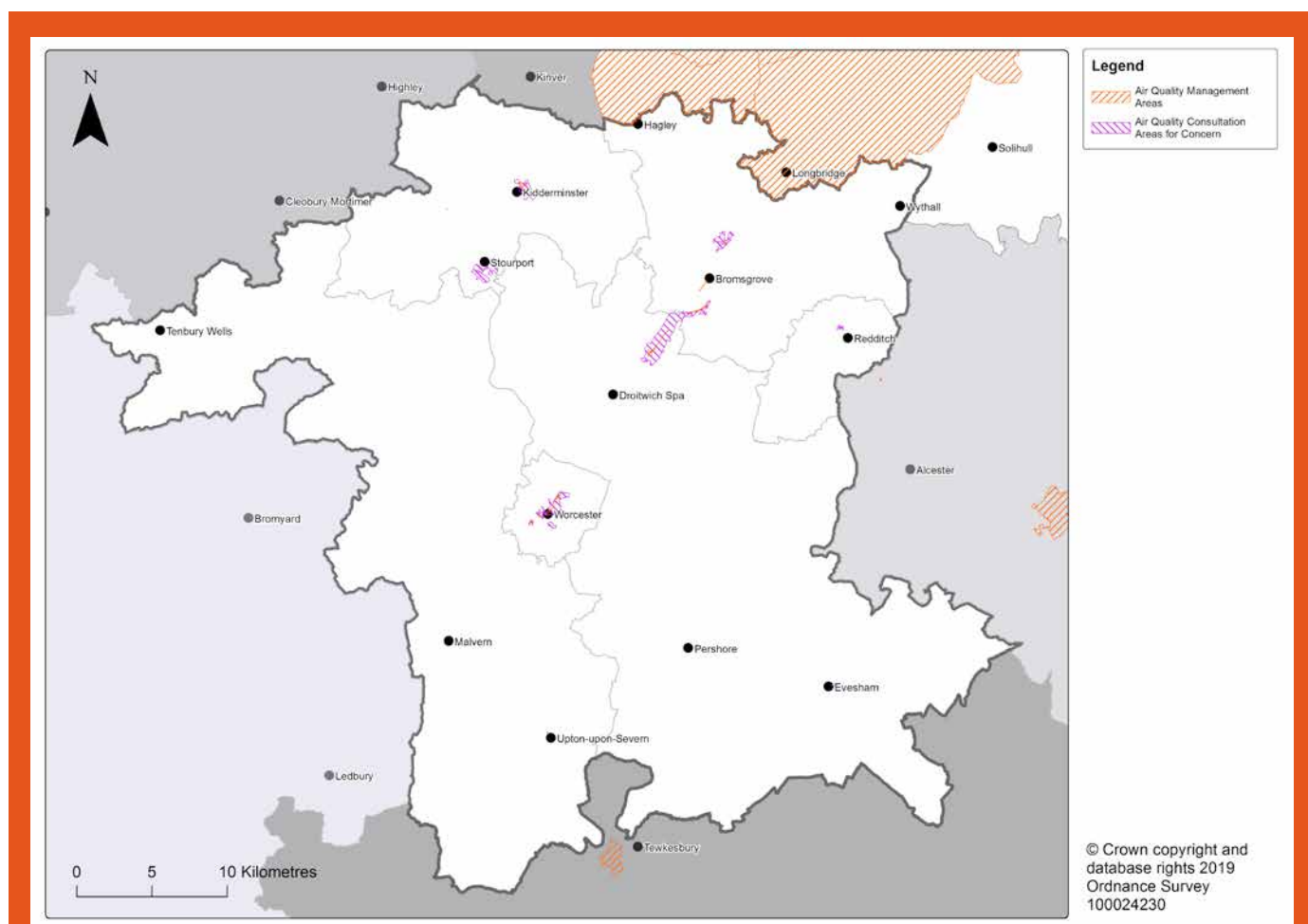
Flooding around Upton upon Severn

2.136 Mineral extraction can impact the water quality hydrology of a site and its surroundings by physically removing aquifers and the usable groundwater resources within them, or by “dewatering” to allow minerals to be extracted economically and safely. This may lead to impacts on the water environment, especially if watercourses derive baseflows from this same source of groundwater, if wetlands rely on this water for their existence, or if public water supplies rely on these aquifers. Water quality can be adversely impacted by pollution and increased sedimentation if sites are not well managed and regulated. Care needs to be taken to ensure that sites are designed and worked in ways which protect these water resources.

2.137 However, mineral working and site restoration can also provide opportunities to incorporate processes or features which make a positive contribution to reducing pollution, increasing water quality, increasing water storage, and increase infiltration to help replenish groundwater resources. By viewing individual sites within their wider catchment and as part of a landscape-scale corridor, opportunities for improvements to water quality, quantity and flow can be optimised throughout the life of a mineral development.

Air quality

Figure 2.18. Air Quality Management Areas in Worcestershire



Note: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals to assist in the use and implementation of the Minerals Local Plan

2.138 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.²⁰⁶ Elevations in air pollution can cause lung irritation and exacerbate lung and heart conditions.²⁰⁷ Nitrogen dioxide (NO₂) and ground level ozone (O₃) from vehicles and chimneys can also have similar impacts.

2.139 Mineral development can impact on air quality very locally through dust emissions, but also more widely through transporting materials from source to their end use. Significant numbers of vehicle movements can negatively impact on local air quality, particularly where the road network is within or in close proximity to Air Quality Management Areas (AQMA).²⁰⁸

²⁰⁶ Worcestershire Regulatory Services (September 2013) *Air Quality Action Plan for Worcestershire*, <http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-action-plan.aspx>.

²⁰⁷ Worcestershire Regulatory Services (September 2013) *Air Quality Action Plan for Worcestershire*, <http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-action-plan.aspx>.

²⁰⁸ Air Quality Management Areas in Worcestershire can be found at <http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-management-areas.aspx>. It should be noted that Worcester City Council's Licensing and Environmental Health Committee (8th January 2018) approved the declaration of a city-wide air quality management area and revocation of the St Johns, Dolday, and Lowesmoor/Rainbow Hill air quality management areas, but at the time of preparing the Minerals Local Plan, the official order and ratification had not yet been completed.

Health and well-being

- 2.140** Overall health in Worcestershire is better than the England average.²⁰⁹ However there is evidence of mental ill-health in the county, and recorded diabetes is significantly higher in Worcestershire than the England average.²¹⁰ Life expectancy and the occurrence of health-related deprivation, mental ill-health and respiratory diseases varies significantly; poorer performance is predominantly in the urban areas, but there are also some pockets of poorer health in the more rural parts of the county.²¹¹ Both locally and nationally there is also a high health burden from conditions which are linked to patterns of behaviour, including sedentary lifestyles.²¹²
- 2.141** Mineral development can result in impacts on health and well-being through changes to the environment and amenity impacts. Both mental and physical health can be affected, and vulnerable groups are more likely to be at risk. It is therefore important for mineral development to take account of health issues in the county and consider the opportunities for mineral development to deliver benefits as well as minimising and mitigating potentially negative effects. Community liaison committees can be an effective means of keeping local communities informed about operations on site and can help to address any issues arising in a timely, positive and constructive manner.

Access and recreation

- 2.142** Access to high-quality green space can contribute 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 anti-social behaviour, improve social interaction, help to build self-esteem, and

contribute to social mobility.²¹³ Measures which help to increase everyday physical activity as part of daily routines can be a low or no cost options for improving health and well-being which result in long-lasting behaviour change.²¹⁴

- 2.143** In Worcestershire, there are over 4,600km of public rights of way²¹⁵ and over 11,750 hectares of free-to-access natural green spaces.²¹⁶ 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, and the Worcestershire Way), as well as the Geopark Way. Local-scale provision of informal public access sites is generally good and there are a range of county-scale recreation sites²¹⁷ in the Wyre Forest, and in the Lickey, Clent and Malvern Hills.
- 2.144** Many rights of way are important in their own right, providing access to the countryside, opportunities for active recreation and cultural links; however they can also contribute to the wider environment, providing corridors for biodiversity and contributing to landscape character, local distinctiveness and the experience and character of the historic environment.
- 2.145** The condition of footpaths in the county is generally good, but the network of bridleways and cycle routes tends to be more fragmented.²¹⁸ The proportion of households in the county with good access to county-scale and sub-regional-scale²¹⁹ 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, in spite of large areas of green space.

209 Worcestershire Health and Well-being Board, *Joint Health & Well-being Strategy 2016-21*, http://www.worcestershire.gov.uk/info/20565/health_and_well-being_board.

210 Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper*.

211 Worcestershire County Council (September 2014) *Green Infrastructure Framework 4: Socioeconomic Benefits of Green Infrastructure*, www.worcestershire.gov.uk/GI.

212 Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper*.

213 Worcestershire County Council (September 2014) *Green Infrastructure Framework 4: Socioeconomic Benefits of Green Infrastructure*, www.worcestershire.gov.uk/GI.

214 Worcestershire Health and Well-being Board, *Joint Health & Well-being Strategy 2016-21*, http://www.worcestershire.gov.uk/info/20565/health_and_well-being_board.

215 Including cycle paths, permissive routes, canal towpaths and other similar infrastructure. Worcestershire County Council (2007) *Rights of Way Improvement Plan*.

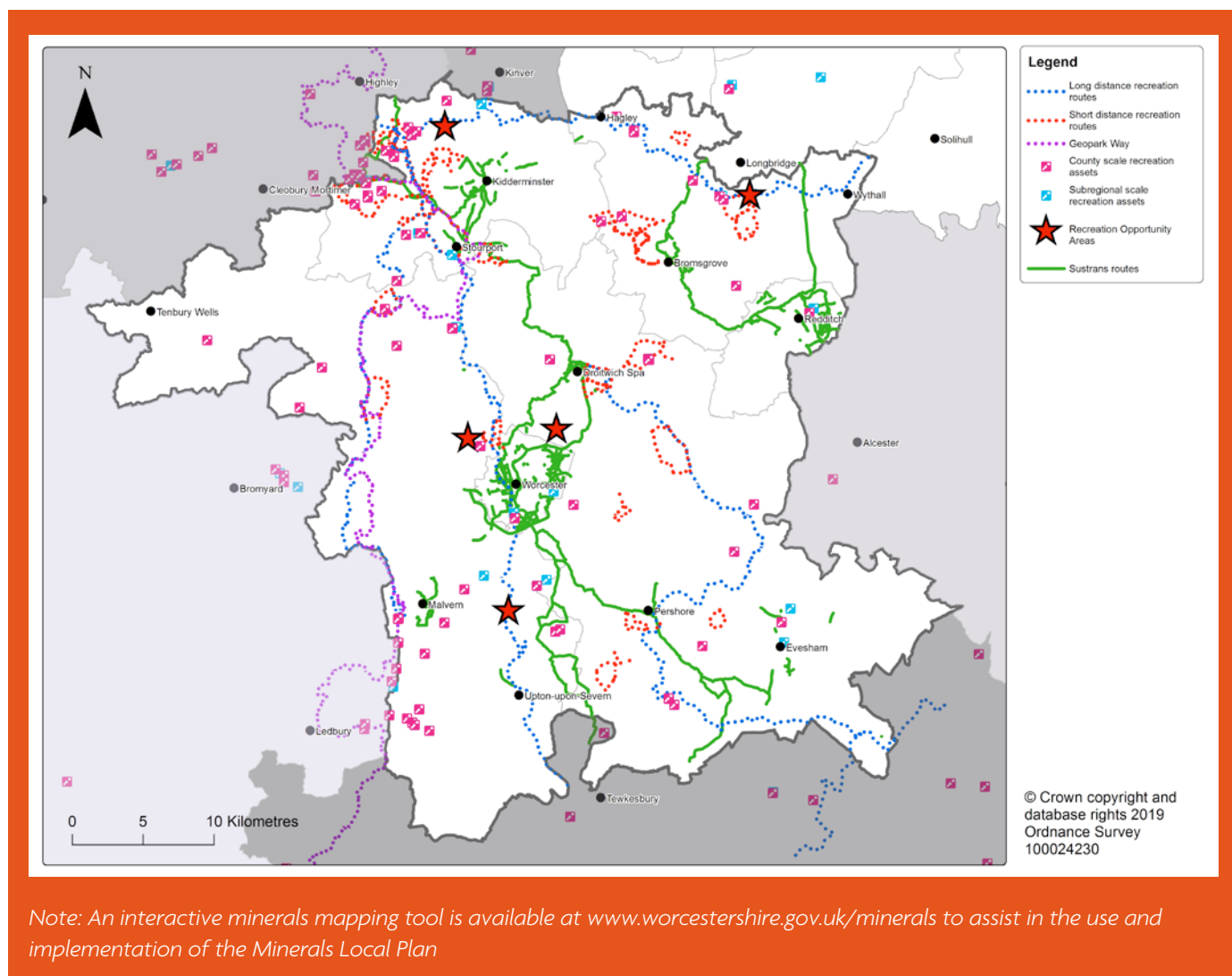
216 Worcestershire County Council (September 2014) *Green Infrastructure Framework 3: Access and Recreation*, www.worcestershire.gov.uk/GI.

217 Sites that are 100ha or larger, as defined by the Accessible Natural Greenspace Standard developed by Natural England.

218 Including cycle paths, permissive routes, canal towpaths and other similar infrastructure. Worcestershire County Council (2007) *Rights of Way Improvement Plan*.

219 Sites that are 500ha or larger, as defined by the Accessible Natural Greenspace Standard developed by Natural England.

Figure 2.19. Informal access and recreation



2.146 Population growth in the county also means there is an increasing demand for informal recreation opportunities; over 40% of sub-regional recreational sites in or around Worcestershire are thought to be near, at or over visitor capacity and opportunities to expand existing sites are limited.²²⁰ In response to this, five areas of search for the consideration of new or extended informal recreation sites in Worcestershire have been identified: Wyre Forest; Lickey Hills (including enhancement of the canal to Worcester); Clifton Water Park south of Kempsey; Worcester – Droitwich Park; and Hallow Riverside Park.²²¹

2.147 Minerals development may temporarily prevent or alter access to green spaces, public rights of way or other access routes, but there is also significant potential for mineral workings to contribute to the provision of accessible green space and to improved public rights of way networks. By planning and designing individual sites within the context of the wider network of public access routes and green spaces, opportunities to connect, extend or enhance access and recreation assets can be optimised.

220 Worcestershire County Council (September 2014) *Green Infrastructure Framework 3: Access and Recreation*, www.worcestershire.gov.uk/GI.

221 Worcestershire County Council (September 2014) *Green Infrastructure Framework 3: Access and Recreation*, www.worcestershire.gov.uk/GI.



Example of a lasting legacy from mineral working in Worcestershire - Beckford community nature reserve

3. Vision and objectives

Introduction

3.1 The Minerals Local Plan includes a vision for mineral development in Worcestershire 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 (Figure 3.1. The relationship between the vision, objectives and the policy framework) and are based on the key issues for the Minerals Local Plan which are summarised in this chapter. The plan's implementation and monitoring framework in Chapter 8 sets out indicators which will measure whether the objectives are being met over the life of the plan.

Key issues for the Worcestershire Minerals Local Plan

3.2 In line with 'the presumption in favour of sustainable development' of the National

Planning Policy Framework, the Minerals Local Plan must positively seek opportunities to meet the development needs of the county and be sufficiently flexible to adapt to rapid change, providing for objectively assessed needs to be met²²² unless protected areas or assets of particular importance provide a strong reason for restricting the overall scale, type or distribution of development in the plan area, or any adverse impacts of doing so would significantly and demonstrably outweigh the benefits when assessed against the policies in the National Planning Policy Framework taken as a whole.²²³

3.3 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 policies, the Duty to Cooperate, the Plan's evidence base and background documents,²²⁴ the findings of statutory and non-statutory assessments,²²⁵ and the outcomes of stakeholder engagement and public consultation.

²²² The *National Planning Policy Framework* also requires strategic plans (Local Plans that contain policies to address the strategic priorities of an area) to provide for any needs that cannot be met within neighbouring areas, as established through Statements of Common Ground. Through the constructive, active and ongoing discussions under the Duty to Cooperate through the preparation of the Minerals Local Plan, none of the Mineral Planning Authorities around Worcestershire have identified any needs that cannot be met which the Worcestershire Minerals Local Plan needs to address, although they have recognised that Worcestershire's demand for crushed rock is currently being supplied from outside the Worcestershire. The Mineral Planning Authorities and Aggregate Working Parties have indicated that supplying Worcestershire's demand for crushed rock can continue to be accommodated.

²²³ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 11.

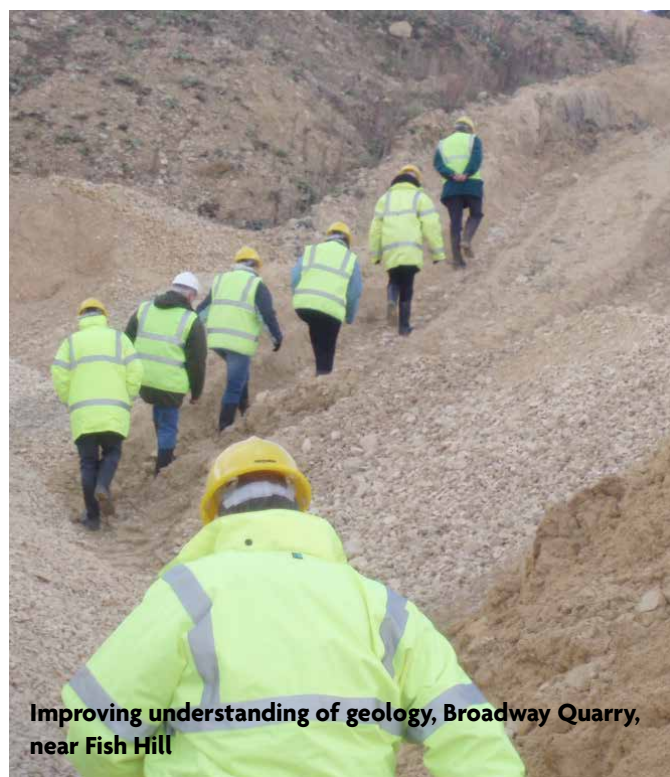
²²⁴ Background documents are available at www.worcestershire.gov.uk/mineralsbackground.

²²⁵ All iterations of the Sustainability Appraisal process, Habitats Regulations Assessment process, Strategic Flood Risk Assessment process, Equalities Impact Assessment relevance screening process, and Health Impact Assessment are available at www.worcestershire.gov.uk/mineralsbackground.

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



- 3.4 Strategic policies in the plan should provide an overall strategy for the pattern, scale and quality of development, the infrastructure for the provision of minerals, climate change mitigation and adaptation, and conservation and enhancement of the natural and built and historic environment, including landscape and green infrastructure.²²⁶
- 3.5 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 to ensure that any policies and proposals for where and how mineral development should occur will be relevant to the local context and will not only avoid harm but will contribute to wider sustainable development goals.



²²⁶ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 20.

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

- a) the steady and adequate supply of aggregates to meet objectively assessed needs²²⁷ to 2035 and beyond, considering:
 - the contribution of substitute, secondary and recycled materials and mineral waste to overall supply;²²⁸
 - the current landbank of permitted reserves of sand and gravel; and
 - the constraints on delivering crushed rock supply over the life of the plan.²²⁹
- b) the steady and adequate supply of locally and nationally important industrial minerals such as brick clay and silica sand;
- 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.

3.7 Due to the quantities of mineral resources required 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.

3.8 In Worcestershire, there is a strong relationship between the location of mineral resources and the character of the landscapes in which 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 has been used in the past and is used now. Collectively these components contribute to the character of an area.

3.9 The scale and distribution of mineral resources inevitably influences where they can be worked, but where there are clusters of mineral resources in Worcestershire there is often a strong coherence to the character and distinctiveness of the area, and significant differences can be seen in character between different clusters. This relationship gives scope for greater gains to be delivered by pursuing a co-ordinated approach across a wider area than if sites are considered individually, and for minerals development to help to address some of Worcestershire's important economic, environmental and social issues by working and restoring mineral sites in a locally beneficial way.

3.10 High-quality green infrastructure networks²³⁰ offer wide-ranging and multifunctional social, economic and environmental benefits, both at a site scale and a landscape scale. Incorporating green infrastructure as part of sustainable development offers an important opportunity to address climate change mitigation and adaptation, enable and support healthy lifestyles, improve air quality, and conserve and enhance the natural, built and historic environment.²³¹ As green infrastructure is multifunctional, it offers a cost-effective way to maximise gains across the components²³² of green infrastructure which are appropriate to the landscape character, ecology, geology and hydrology of an area.

3.11 Green infrastructure components have therefore been considered alongside the known mineral resources in the county²³³ to develop an overall strategy for the pattern and scale of mineral development and the provision of climate change mitigation and adaptation, and conservation and enhancement of the built, historic, natural and water environments.

²²⁷ Worcestershire's annual *Local Aggregate Assessments* are available at www.worcestershire.gov.uk/amr.

²²⁸ In conjunction with the Worcestershire County Council (2012) *Worcestershire Waste Core Strategy Local Plan 2012-2027*, www.worcestershire.gov.uk/wcs.

²²⁹ See Chapter 2 (Portrait of Worcestershire) and Worcestershire County Council (2018) *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

²³⁰ Green infrastructure is a network of multifunctional green spaces and natural elements (including rivers, streams, canals, woodlands, street trees, parks, rock exposures and semi-natural greenspaces) that acts as a multifunctional resource capable of delivering a wide range of environmental and quality of life benefits (ecosystem services) for local communities.

²³¹ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*.

²³² Green infrastructure components include biodiversity, the landscape, the historic environment, the water environment and publicly accessible green spaces and informal recreation sites.

²³³ See Appendix 2 (Identifying and defining the strategic corridors).

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 health and quality of life, and enhancing the built, historic, natural and water environment, that together contribute to the diverse character of the county and surrounding area. Mineral development, including transportation and processing, will be water and energy efficient, will optimise on-site energy provision from renewable and low-carbon sources, and will mitigate and adapt to the impacts of climate change.

Worcestershire's permitted mineral sites and supporting infrastructure will provide a steady, adequate and sustainable supply of locally and nationally important minerals. They will contribute to the vitality of the local economy through the delivery of minerals to local and national markets, whilst making the best use of substitute, secondary and recycled minerals and mineral wastes to minimise the need for primary materials. Worcestershire's locally and nationally important mineral resources, permitted mineral sites and supporting infrastructure will remain available for future use, having been safeguarded against sterilisation by non-minerals development.

Mineral supply will be delivered from working and processing at multiple sites over the life of the plan, focused in five strategic corridors: Avon and Carrant Brook Strategic Corridor, Lower Severn Strategic Corridor, North East Worcestershire Strategic Corridor, North West Worcestershire Strategic Corridor, and Salwarpe Tributaries Strategic Corridor. The coordinated design, working and restoration of mineral sites will strengthen the distinctive character of each strategic corridor, as well as respecting the site-specific context and addressing issues identified through effective community engagement. These mineral sites will be designed to deliver and enhance multifunctional green infrastructure and become integrated into Worcestershire's green infrastructure network. The planned contribution each site will make towards delivering a positive lasting legacy will be a prerequisite to development, ensuring all sites have a clear vision for delivering benefits throughout winning and working phases, and through delivering high-quality restoration at the earliest opportunity to enable an appropriate after-use.

Mineral sites will make prudent use of mineral resources, balancing the need to maximise the quantities of resource extracted with the need to achieve final landforms and restoration that deliver multifunctional benefits and is appropriate in the landscape.

Objectives of the Worcestershire Minerals Local Plan

- MO 1. Enable the supply of minerals
- MO 2. Protect and enhance the environmental and socio-economic function of Worcestershire's network of green spaces and natural elements (green infrastructure)
- MO 3. Protect and enhance the quality, character and distinctiveness of the built, historic, natural and water environment
- MO 4. Protect and enhance the health, well-being, safety and amenity of people and communities
- MO 5. Protect and enhance the vitality of the local economy
- MO 6. Ensure the prudent use of natural resources



Riverside Meadows landscape type (Ham Bridge, Worcestershire)

4. Spatial strategy (strategic policies)

Introduction

- 4.1 Mineral development in Worcestershire should be located in the five strategic corridors identified in Figure 4.1 (Key Diagram).²³⁴ The strategic corridors are the areas in the county where there is the greatest concentration of locally and nationally important mineral resources. They are well located to serve planned housing and infrastructure development²³⁵ and within each of the strategic corridors there are common characteristics and issues which will benefit from a coordinated approach to the working and restoration of multiple mineral sites.
- 4.2 Throughout the Minerals Local Plan, mineral sites are viewed as part of the wider green infrastructure network, before, during and after they are worked for their minerals. The priorities for the strategic corridors (policies MLP 4 to MLP 8) are fundamental to this approach, setting out the long-term priorities which mineral development can and should help to address in each of the strategic corridors. The priorities
- identified differ between each of the strategic corridors because of the types and properties of the mineral resources they contain, and the environmental and economic diversity in the county.
- 4.3 Policies MLP 4 to MLP 8 take account of the likely characteristics of mineral working in each of the corridors; consider how green infrastructure components²³⁶ interact at a landscape-scale to contribute to the economic and social well-being and environmental quality of the corridor; and set out focused priorities that identify how mineral development can best enhance the green infrastructure networks in each corridor to deliver social, economic and environmental benefits. The identified priorities seek to deliver multifunctional benefits across green infrastructure components and take a long-term view. This will enable the coordination of benefits from multiple mineral developments in the same strategic corridor, even where they are not worked concurrently or by the same mineral operator.

²³⁴ See Appendix 2 for information about identifying and defining the strategic corridors.

²³⁵ The Second Stage Consultation on the Minerals Local Plan showed that all parts of the county are within a distance of planned development in and around Worcestershire which is likely to result in demand for mineral resources. Each of the corridors has access to the strategic transport network.

²³⁶ Biodiversity, the landscape, the historic environment, the water environment and publicly accessible green spaces and informal recreation sites.

4.4 The strategic corridor priorities complement other aspirations for development expressed in the Local Plans and Neighbourhood Plans in the county, the Worcestershire Strategic Economic Plan,²³⁷ and other relevant policies and strategies, as well as characteristic land management practices within the corridors.

4.5 In limited circumstances, the supply of minerals from outside the strategic corridors might be a sustainable option. These exceptions are detailed in policy MLP 1 (Strategic Location of Development) and include borrow pits (see also policy MLP 2, Borrow Pits) and mineral extraction to prevent unnecessary sterilisation of resources by other development (MLP 1 and Chapter 7).

Strategic location of development

Policy MLP 1: Strategic Location of Development

Contributing to:

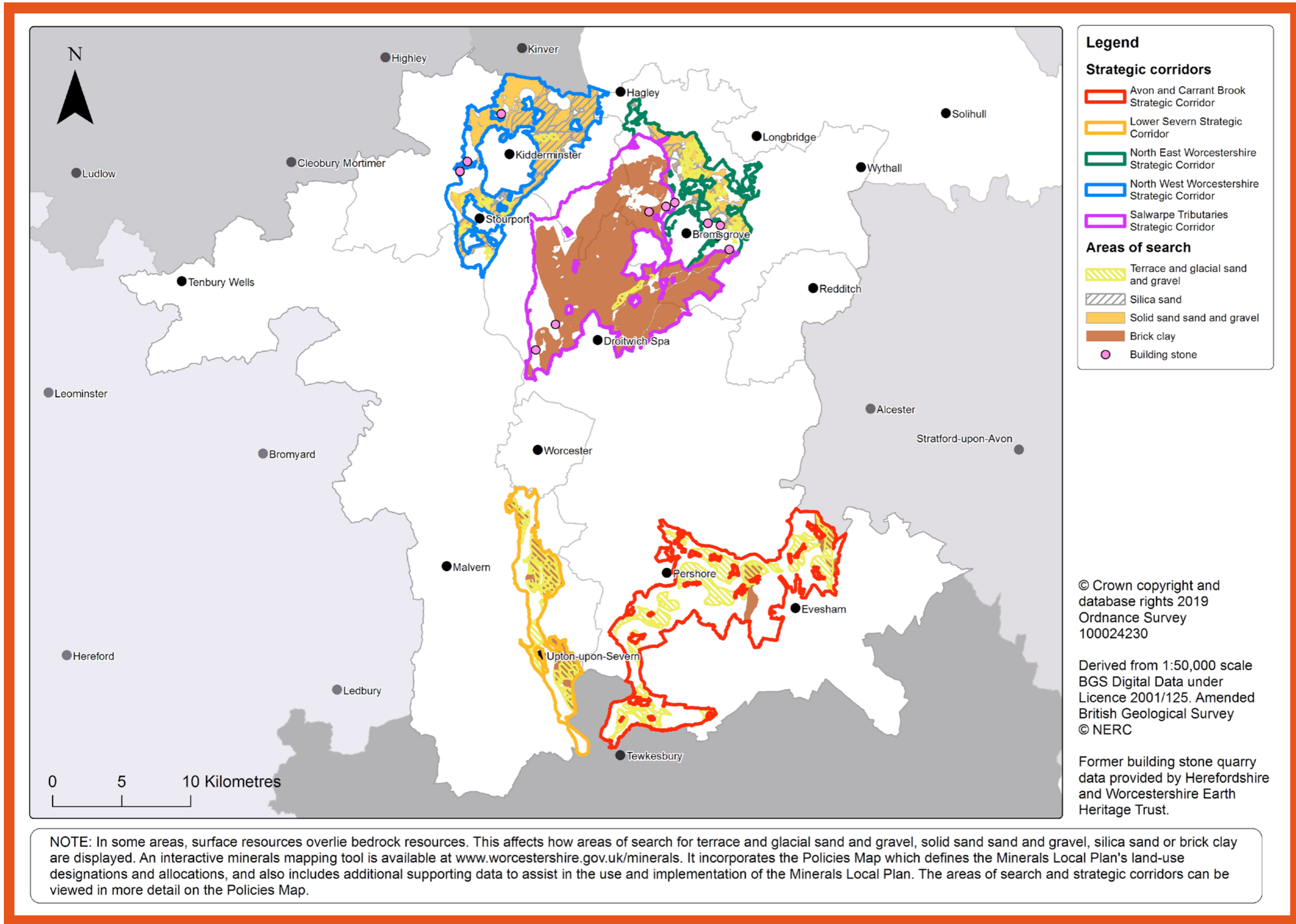
Objectives MO1, MO2, MO3, MO4, MO5, MO6

- a) Planning permission will be granted for mineral development where it is located within a strategic corridor and:
 - i. it is within an allocated site (which includes areas of search* shown on Figure 4.1 Key diagram and defined on the Policies Map** and specific sites and preferred areas allocated in the Mineral Site Allocations Development Plan Document); or
 - ii. it is demonstrated that the mineral resource has qualities which mean a sustainable supply of the mineral cannot be delivered from extant or allocated sites.
- b) Planning permission will be granted for mineral development within or outside a strategic corridor where:
 - i. it is within the boundary of a site with extant planning permission for mineral development; or
 - ii. the proposed development is a borrow pit which meets the requirements of policy MLP 2; or
 - iii. it would prevent some or all of a mineral resource within a Mineral Safeguarding Area from being sterilised by non-minerals development in accordance with policy MLP 31.
- c) Planning permission will be granted for mineral development outside a strategic corridor where it is demonstrated that the mineral resource has qualities which mean sustainable supply of the mineral cannot be delivered from within the strategic corridors. For sand and gravel, silica sand and brick clay resources, this will be wholly exceptional.

* Some flexibility will be applied when considering whether a proposal for building stone is within an area of search for building stone as these are based on point data.

** The Policies Map defines the Minerals Local Plan's land-use designations and allocations and is available as part of an interactive minerals mapping tool at www.worcestershire.gov.uk/minerals.

Figure 4.1. Key diagram



Reasoned justification

Proposals within the strategic corridors

Allocated sites

- 4.6 There is policy preference in policy MLP 1 for mineral development within extant and allocated sites. The Minerals Local Plan allocates areas of search²³⁸ for sand and gravel, silica sand, brick clay and building stone (see and the Policies Map).²³⁹ A Mineral Site Allocations Development Plan Document (DPD) will be prepared to allocate specific sites and preferred areas.²⁴⁰ The level of certainty that mineral development will come forward will be high for specific sites, and fairly high for preferred areas.²⁴¹ There is less certainty that mineral development will come forward in the areas of search,²⁴² but they have been designated to provide a positive framework to ensure that a sufficient supply of minerals can be delivered over the life of the plan, to facilitate the minerals industry to find and put forward sites, and (combined with the strategic corridor priorities in policies MLP 4 to MLP 8) to provide as much certainty as possible to communities over where and how mineral development might take place.
- 4.7 No areas of search have been designated for crushed rock resources due to the viability, environmental and amenity constraints affecting the majority of the land in Worcestershire which contains crushed rock deposits.²⁴³ No areas of search have been designated for other types of mineral.
- 4.8 The policy preference for mineral development within allocated sites is subject to other parts of the Development Plan being properly addressed, and will not override the need to ensure that the development proposed is sustainable.

Mineral resources that cannot be delivered from extant or allocated sites

- 4.9 Where a sustainable supply of minerals cannot be delivered from extant or allocated sites, mineral development elsewhere in a strategic corridor may be appropriate. These circumstances are expected to be limited and to primarily be for mineral types for which there are no site allocations, or for which there were no extant planning permissions in Worcestershire when the plan was adopted; particularly crushed rock, some types of building stone, brine, or types of clay other than Mercia Mudstone.
- 4.10 Demonstration of the reasons for working minerals outside extant or allocated sites would need to be proportionate to the proposal, and may require technical information to be provided by an appropriate and competent expert. Where there are no sites with extant planning permissions and no allocated sites for a particular mineral in the county, this is likely to provide adequate justification. For building stone²⁴⁴ it might be appropriate to include reference to the specific appearance and characteristics of building stone required where variations in the appearance or characteristics of stone prevent those within allocated sites being suitable for use in a particular project.
- 4.11 Any proposal for sand and gravel, silica sand or brick clay development within a strategic corridor but outside extant or allocated sites would need to demonstrate why sustainable supply cannot be delivered from those extant or allocated sites. This will be expected to include detailed geological information about the specific properties or qualities of the resource, data demonstrating the local or national need for the mineral, and the evidence justifying why this material cannot be worked at existing or allocated sites.

238 For information on how the areas of search have been designated, see Worcestershire County Council (August 2018) Minerals Local Plan background document, *Location of development: screening and site selection methodology* available at www.worcestershire.gov.uk/mineralsbackground.

239 An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals which incorporates the Policies Map (the Policies Map defines the Minerals Local Plan's land-use designations and allocations), and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan.

240 The Mineral Site Allocations Development Plan Document will be subjected to a series of assessments during its development, separately from those undertaken on the Minerals Local Plan. This will include assessment under the Habitat Regulations, Sustainability Appraisal incorporating the requirements of the Strategic Environmental Assessment Regulations, Strategic Flood Risk Assessment, and Equality Impact Assessment.

241 Planning Practice Guidance defines "Specific Sites" as 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" and defines "Preferred Areas" as "areas of known resources where planning permission might reasonably be anticipated. Such areas may also include essential operations associated with mineral extraction". Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals*, paragraph: 008 Reference ID: 27-008-20140306 Revision date: 06 03 2014.

242 Planning Practice Guidance defines "Areas of Search" as "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". Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals*, paragraph: 008 Reference ID: 27-008-20140306 Revision date: 06 03 2014.

243 See Chapter 2: Portrait of Worcestershire and Chapter 5: Supply of mineral resources.

244 Some flexibility will be applied when considering whether a proposal for building stone is within an area of search for building stone as these are based on point data.



Proposals within or outside a strategic corridor

Sites with extant planning permission

4.12 Over the life of the plan, proposals to alter the development already permitted at sites with extant planning permission (including those which are permitted during the life of the plan) may arise, such as through periodic reviews of mineral planning permissions (ROMPs) or applications for the variation of planning conditions. Whilst there is a policy preference in policy MLP 1 for mineral development within extant sites, this is subject to other parts of the Development Plan being properly addressed, and will not override the need to ensure that the development proposed is sustainable.

4.13 Any proposals to extend a site beyond the boundary of the existing permitted site will not be considered to be part of a site with extant planning permission for the purposes of this

policy. The red line boundaries on extant planning permissions will be considered definitive when addressing this issue. Proposals for extensions to existing sites will be considered on their own merits against the tests of Policy MLP 1, and no greater policy preference is given to extensions than to proposals for new sites. This may help to facilitate new entrants to the market in Worcestershire.

Borrow pits

4.14 Borrow pits directly serve a specific project nearby and proposals for borrow pits will therefore not necessarily reflect the location of site allocations or the strategic corridors. To be classified as a borrow pit, proposals must meet all of the requirements of policy MLP 2 (Borrow Pits). Proposals that do not demonstrate these associations will be considered as standalone mineral workings.



Restored sand and gravel working, Retreat Farm, Grimley

Winning and working of resources to prevent sterilisation

- 4.15 If not properly planned, non-mineral development such as housing or commercial development can result in the sterilisation of mineral resources. This can be avoided by extraction of some or all of the mineral resource in advance of the non-mineral development taking place (or in phases alongside it), or by undertaking incidental recovery to utilise a portion of the mineral resource as part of site groundworks (see Chapter 7).
- 4.16 The location of such proposals will depend largely on other policies in the Development Plan that relate to the non-mineral development and will not necessarily reflect or be limited to the location of the strategic corridors. Planning applications will be expected to demonstrate how the proposed development will prevent resources from being sterilised. Where this cannot be satisfactorily demonstrated, the proposal will be considered as a standalone mineral working.
- 4.17 Planning conditions and planning obligations may be required to manage the relationship between the minerals extraction and the subsequent non-mineral development (see Chapter 7). Both the

Mineral Planning Authority and relevant Local Planning Authority will need to be involved in discussions from the outset.

Proposals outside a strategic corridor

- 4.18 There is policy preference in policy MLP 1 for mineral development within the strategic corridors. With the exception of changes to extant sites, borrow pits and the winning and working of resources to prevent sterilisation, planning permission will only be granted for mineral development outside the strategic corridors where it is demonstrated that a sustainable supply of the specific mineral cannot be delivered from within the strategic corridors.
- 4.19 As the identification of the strategic corridors was informed by the distribution of mineral resources and other socio-economic and environmental factors,²⁴⁵ working outside the strategic corridors is expected to be wholly exceptional for sand and gravel, silica sand and brick clay. In order not to undermine the spatial strategy, and to ensure the plan's vision is realised, applicants will need to demonstrate why sustainable supply cannot be delivered from either extant or allocated sites within the strategic corridors.

²⁴⁵ See Appendix 2 for information about identifying and defining the strategic corridors.

- 4.20 The distribution of crushed rock, building stone²⁴⁶ and other mineral deposits has not been instrumental in defining the strategic corridors due to the viability, environmental and amenity constraints on the deposits or the lack of geological or market information to indicate that the working of other minerals would be viable in the county (see Appendix 2). However part c of policy MLP 1 would enable the working of these types of mineral outside the strategic corridors.
- 4.21 Demonstration of reasons for working these minerals outside existing or allocated sites would need to be proportionate to the proposal,

but may require technical information to be provided by an appropriate and competent expert. The absence of the specific mineral within the strategic corridors may provide adequate justification. For crushed rock proposals, it might also be appropriate to include reference to the need for crushed rock identified in the most recent Local Aggregate Assessment. For building stone proposals, it might include reference to the specific appearance and characteristics of building stone required where variations in the appearance or characteristics of stone prevent those resources within the strategic corridors being suitable for use in a particular project.

Borrow pits

Policy MLP 2: Borrow Pits

Contributing to:

Objectives MO1, MO2, MO4, MO5, MO6

Proposals for borrow pits must be operationally related to a specific project and demonstrate that all of the following points apply:

- a) the mineral extracted will only be used in connection with the specified project;
- b) the borrow pit is located on or in close proximity to the specified project, and material will be transported to its point of use with minimal use of public highways and without undue interference with the rights of way network;
- c) mineral extraction will be limited to the life of the specified project;
- d) the working and restoration of the borrow pit will deliver locally appropriate enhancements to existing green infrastructure networks; and
- e) the borrow pit will be restored to an appropriate final landform at the earliest opportunity, without the use of imported material, other than that generated by the specified project.

Reasoned justification

- 4.22 Borrow pits can contribute towards the sustainable supply of minerals by enabling the working of mineral resources that might not otherwise be practicable or financially attractive to extract. They can also enable other forms of development by providing a local source of material. Borrow pits directly serve a specific project nearby, and they tend to be small-scale,

short-term operations. Borrow pits can be a positive way of working resources which might not be appropriate as standalone workings or which were discounted from consideration as allocated sites due to the estimated volume of mineral at the site. Reduced transport distances can also reduce impacts on amenity and climate change in comparison to obtaining material from quarries further from the project.

²⁴⁶ Thirteen of the former building stone quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone* are included as Areas of Search within the strategic corridors.



Borrow pit at Powick, associated with a flood alleviation scheme

- 4.23 Proposals that do not meet all the criteria in policy MLP 2 will be considered to be standalone mineral workings, not borrow pits.

Association with the specified project

- 4.24 It is important to ensure that borrow pits are closely linked to the project with which they are associated. The proposal for the borrow pit development should include sufficient details of the associated project to enable this to be considered in the decision-making process. The coordinated submission of proposals may be appropriate in some cases, even where the proposals are submitted to different planning authorities. Planning conditions and/or planning obligations may be required to manage the relationship between the mineral extraction and the specified non-mineral development. The Mineral Planning Authority and relevant Local Planning Authority will both need to be involved in discussions from the outset.

Working and restoration

- 4.25 The wider impacts of borrow pits need to be fully considered. Working and restoration of borrow pits should be undertaken to the same standards as longer-term mineral workings in accordance with the Development Management policies set out in Chapter 6 (policies MLP 17 to MLP 30). Where the proposed borrow pit is within a strategic corridor, the priorities set out in the relevant policy (policies MLP 4 to MLP 8) will apply. In all locations, green infrastructure networks and the site's local context should inform working and restoration proposals, in accordance with policy MLP 3.
- 4.26 Borrow pits should be restored without the use of imported material, other than that generated by the specified project. This will enable the transport benefits to be fully realised. Proposals should demonstrate how an appropriate landform will be achieved and outline the balance between the mineral extracted and any fill material generated by the project. Where any fill material constitutes waste, consideration will need to be given to the requirements of the Waste Core Strategy.



Green infrastructure

4.27 Green infrastructure is a network of multifunctional green spaces and natural elements.²⁴⁷ It is capable of delivering a wide range of economic, environmental and quality of life benefits for local communities.^{248 249} The underlying principle of green infrastructure is that the same area of land can frequently offer multiple benefits.

4.28 High-quality green infrastructure can drive economic growth and regeneration, helping to create high-quality environments which are attractive to businesses and investors. It can help deliver quality of life and health benefits by providing opportunities for recreation, social interaction and play, and it can reinforce and enhance landscape character, historic landscape character and local distinctiveness, contributing to a sense of place.²⁵⁰ It can enhance and restore the setting of heritage assets, and can make a significant contribution to halting the decline in biodiversity.²⁵¹ It can help to reduce air pollution, noise and the impacts of extreme heat

and extreme rainfall events. It can help mitigate risks associated with climate change and adapt to its impacts by storing carbon, improving drainage, managing flooding and water resources, improving water quality, and can help species adapt to climate change by providing opportunities for movement.

4.29 Green infrastructure components considered in the planning, design and management of green infrastructure include biodiversity, the landscape, the historic environment, the water environment and publicly accessible green spaces and informal recreation sites. As well-being is an important part of delivering ecosystem services and ecological networks, the green infrastructure approach therefore integrates consideration of environmental, economic, health and social benefits to ensure delivery against both socio-economic and environmental objectives.

4.30 Considering networks of green spaces and natural elements in an integrated way ensures that measures are appropriate to the local context and are able to achieve benefits that are far greater than when individual components are considered in isolation. To ensure that these benefits are delivered, green infrastructure must be well planned, designed, managed and maintained.

²⁴⁷ Natural elements include rivers, streams, canals, woodlands, street trees, parks, rock exposures and semi-natural greenspaces.

²⁴⁸ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*.

²⁴⁹ Worcestershire Green Infrastructure Partnership, *Worcestershire Green Infrastructure Strategy 2013-2018*. Both the Worcestershire Local Enterprise Partnership and Worcestershire Local Nature Partnership are signatories to the Worcestershire Green Infrastructure Strategy.

²⁵⁰ Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Natural Environment*, paragraph: 030 Reference ID: 8-030-20160211 Revision date: 11 02 2016

²⁵¹ Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Natural Environment*, paragraph: 030 Reference ID: 8-030-20160211 Revision date: 11 02 2016

Policy MLP 3: Green Infrastructure

Contributing to:

Objectives MO2, MO3, MO4, MO5

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect and enhance networks of green infrastructure throughout the life of the development.

A level of technical assessment appropriate to the proposed development will be required to demonstrate how, throughout its lifetime, the delivery of multiple benefits will be optimised, taking account of:

- a) the green infrastructure priorities of the relevant strategic corridor;
- b) the local economic, social and environmental context of the site;
- c) the potential impacts of climate change;
- d) site-specific opportunities to:
 - i. protect and enhance inherent landscape character;
 - ii. conserve, restore and enhance ecological networks and deliver net gains for biodiversity;
 - iii. conserve and enhance the condition, legibility and understanding of heritage assets and their setting;
 - iv. reduce the causes and impacts of flooding;
 - v. protect and enhance the surface water and groundwater resources at the local and catchment scale;
 - vi. improve the condition, legibility and understanding of geodiversity; and
 - vii. enhance the rights of way network and provision of publicly accessible green space.
- e) how green infrastructure benefits will be secured for the long term.

Where significant deviation from the priorities of the relevant strategic corridor is proposed, this will only be considered appropriate where robust justification is provided to demonstrate that the proposal will deliver specific local economic, social and/or environmental benefits, either through or alongside appropriate multifunctional green infrastructure measures, which demonstrably outweigh the benefits which could be realised by delivering the priorities of the relevant strategic corridor.

Reasoned justification

- 4.31 Mineral development can contribute towards maintaining and strengthening networks of green infrastructure through considered design and working methods. Economic, social and environmental benefits can be realised by incorporating multifunctional green infrastructure measures at any time during the life of the site, including preparation and working phases as well as restoration and after-use.
- 4.32 Holistic consideration of the local context and site-specific considerations will influence how green infrastructure can be delivered on individual sites whilst contributing towards the relevant strategic corridor priorities set out in policies MLP 4 to MLP 8.
- 4.33 The technical assessment required by policy MLP 3 should clearly set out how the consideration of the strategic corridor priorities, the local economic, social and environmental context, climate change, and each of the green infrastructure components in part d of policy MLP 3 have influenced the proposed balance of priorities to be delivered on the site, as well as the types of green infrastructure measures by which they will be addressed or delivered at each stage of a site's life.
- 4.34 This should clearly set out the benefits which the chosen suite of green infrastructure measures will deliver for the economy, communities and the environment, and how these have been informed by best practice examples and any national or local green infrastructure standards.²⁵²

²⁵² HM Government (2018) *A Green Future: Our 25 Year Plan to Improve the Environment*, sets out that stronger new standards for green infrastructure will be produced.

Green infrastructure priorities of the relevant strategic corridor

- 4.35 The technical assessment required by Policy MLP 3 should identify the location of the proposed development within the relevant strategic corridor. It should consider the interaction of the site with the local and surrounding network of green spaces and natural elements, and the potential for the site to contribute towards the priorities for the relevant corridor (as set out in policies MLP 4 to MLP 8). Consideration should be given to how the priorities are being delivered at other sites within the corridor, so that measures can be co-ordinated where appropriate, and to ensure that a balance of priorities is achieved over the life of the Minerals Local Plan.
- 4.36 There may be circumstances where the greatest green infrastructure gains can be delivered, or any conflicts minimised, by focusing on only some of the priorities on an individual site. This will be supported where the proposed approach is strongly justified and evidenced through the technical assessment.

Local economic, social and environmental context

- 4.37 The technical assessment required by policy MLP 3 should set out what local economic, social and environmental opportunities and limitations exist or are likely to arise in and around the site. This should draw on the information in the technical assessments required by the development management policies in Chapter 6.
- 4.38 In developing proposals, consideration should also be given to the local economic, social and environmental context of the site in terms of the impacts and opportunities which are likely to occur at all stages of the site's life. This should include, but is not limited to, consideration of any objectives and aspirations set out in relevant Local or Neighbourhood Plans, information arising from pre-application consultation with local communities and stakeholders, any limitations or opportunities afforded by the topography or geology of the site and its surroundings, the

site's relationship to wider ecological networks, the need to safeguard the long-term potential of best and most versatile agricultural land, any opportunities to contribute to maintaining and improving health and well-being²⁵³, and any cumulative impacts or cumulative opportunities arising from existing or approved development.

Potential impacts of climate change

- 4.39 In developing proposals, consideration should be given to potential risks from climate change, as well as any opportunities for the site to contribute towards mitigating and adapting to climate change. The technical assessment required by policy MLP 3 should set out how any likely climate change impacts have been taken into account in site design, working and restoration proposals. This should include, but is not limited to, consideration of the impact of water shortages, flood risk, and land stability (subsidence and heave) on working, processing, mitigation, restoration and after-use.
- 4.40 The technical assessment should identify any necessary mitigation and adaptation measures. This should include consideration of how climate change mitigation and adaptation can be addressed through delivering multifunctional green infrastructure which contributes to wider climate change resilience, such as creating or enhancing habitat networks to allow species migration, or restoration schemes that provide opportunities for flood betterment or improved natural water storage. Technical assessments should also consider whether opportunities exist to minimise vulnerability and improve resilience of communities and infrastructure to climate change. This should take into account the long-term implications for flood risk, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures, as well as any opportunities to provide space for physical protection measures, or for the possible future relocation of vulnerable development and infrastructure.

²⁵³ Depending on the scale and nature of the proposed development, health and well-being issues may be addressed as part of an Environmental Impact Assessment or through a standalone Health Impact Assessment (HIA) where there are expected to be significant health impacts. Health Impact Assessments can be a useful tool to identify and enhance the positive aspects of a proposal through assessment, while avoiding or minimising any negative impacts, with particular emphasis on disadvantaged sections of communities that might be affected. Worcestershire County Council (March 2016) *Health Impact Assessments in Planning Toolkit* advocates undertaking health impact screening to determine whether significant health impacts are likely to arise, prior to scoping the extent of any assessment which may be required. The toolkit is available at http://www.worcestershire.gov.uk/info/20122/joint_strategic_needs_assessment.



Site-specific green infrastructure opportunities

- 4.41 The components of green infrastructure have been considered holistically at a strategic scale to identify multifunctional priorities for each strategic corridor in policies MLP 4 to MLP 8. However, when developing site-specific proposals, consideration of each of the components in part d of policy MLP 3 may reveal opportunities which could not be identified at the strategic scale.
- 4.42 The technical assessment required by policy MLP 3 should consider each of the green infrastructure components in part d of policy MLP 3, drawing on the information in the technical assessments required by the development management policies in Chapter 6, and should set out any site-specific opportunities for protection or enhancement of those components, or any site-specific opportunities to deliver multifunctional benefits which are identified. This should also include detailed consideration of how any site-specific opportunities could be integrated alongside the priorities of the relevant strategic corridor.
- 4.43 In some cases site-specific considerations may indicate that protecting and enhancing networks of green infrastructure can be maximised by focusing on specific components. This would benefit from pre-application discussions with the Mineral Planning Authority and relevant stakeholders, and should also be evidenced through the technical assessment.
- 4.44 Where a site is not within a strategic corridor but meets the exception criteria in policy MLP 1, the green infrastructure components set out in part d of policy MLP 3 will need to be considered at a local and strategic scale. Technical assessments should set out how holistic consideration of the site in the context of the wider network of green infrastructure has led to the proposed suite of multifunctional green infrastructure measures designed to deliver multiple benefits across the site.



Water meadows near Evesham

Securing green infrastructure benefits for the long term

4.45 Effective implementation and management will be critical to delivering the intended green infrastructure outcomes. Use of a ‘benchmarking’ system²⁵⁴ should be considered to quantify the enhancements proposed and delivered over the life of the site. This may also help to demonstrate that any national or local green infrastructure standards are met.

4.46 Green infrastructure requires sustainable management and maintenance arrangements if it is to provide benefits and services in the long term. The technical assessment required by policy MLP 3 should consider the whole life of a site, including the design of the site and its restoration scheme alongside the available options for managing green infrastructure,

including funding its management over the long term, and should set out why the proposed option is considered appropriate for the site and how such arrangements will be secured. It should also identify how long-term management and maintenance considerations have influenced the site’s overall design and proposed working, restoration and aftercare proposals.²⁵⁵ A green infrastructure strategy or concept plan for the site may be a useful tool to bring this information together.²⁵⁶

4.47 Long-term management beyond the statutory five year aftercare period may be required where appropriate, such as where this is necessary for new habitats to become established or to deliver community benefits.

²⁵⁴ Such as <https://www.buildingwithnature.org.uk>. Other green infrastructure benchmarks are likely to emerge over the life of the Minerals Local Plan.

²⁵⁵ Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Natural Environment*, paragraph: 031 Reference ID: 8-031-20160211 Revision date: 11 02 2016.

²⁵⁶ There is an established procedure for developing green infrastructure concept plans for major developments in Worcestershire through the Worcestershire Green Infrastructure Partnership. Examples can be viewed at www.worcestershire.gov.uk/GI.

Strategic corridor priorities

- 4.48 Mineral working presents significant opportunities to deliver green infrastructure gains at a landscape scale. Through the holistic consideration of the components of green infrastructure at a strategic level, priorities have been identified for each strategic corridor:
- Avon and Carrant Brook Strategic Corridor – Policy MLP 4
 - Lower Severn Strategic Corridor – Policy MLP 5
 - North East Worcestershire Strategic Corridor – MLP 6
 - North West Worcestershire Strategic Corridor – MLP 7
 - Salwarpe Tributaries Strategic Corridor – MLP 8.

These priorities have been established²⁵⁷ to guide developers on the appropriate balance between green infrastructure components, and highlight mechanisms to deliver multifunctional benefits which are most likely to be appropriate to the locality.

- 4.49 The strategic corridors each have an inherent coherence. The various components of green infrastructure combine to influence the key characteristics of the landscape types within the corridors. The multifunctional priorities which are set out for each corridor will contribute to addressing strategic issues across the various green infrastructure components at a landscape scale,²⁵⁸ in ways appropriate to the key characteristics of the landscape types within each corridor.²⁵⁹
- 4.50 The priorities for each of the five corridors will be delivered through the working and restoration of multiple sites, both at new sites and through changes to planning permissions at existing sites as opportunities arise.²⁶⁰ Each development proposal will need to be assessed on a site-by-site basis, but the priorities set out in policies MLP 4 to MLP 8 will guide how sites are

designed, worked and restored so that mineral development across a corridor over the life of the plan is coordinated to deliver the priorities. The local context will influence how the green infrastructure priorities can best be integrated to deliver multiple benefits at each stage of a site's life. The strategic corridors are shown on Figure 4.1 (Key Diagram) and on the Policies Map which defines the Minerals Local Plan's land-use designations and allocations. The Policies Map is available on the interactive minerals mapping tool at www.worcestershire.gov.uk/minerals, and this mapping tool also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan.

Avon and Carrant Brook Strategic Corridor Characteristics of the corridor

4.51 The Avon and Carrant Brook Strategic Corridor is identified in the Key Diagram (Figure 4.1) and shown in detail in Figure 4.2. It covers 9,500 hectares of land, and broadly follows the course of the River Avon from north-east of Evesham to Worcestershire's boundary with Gloucestershire near Tewkesbury, and the course of the Carrant Brook from Beckford to the county boundary near Tewkesbury. The corridor skirts Bredon Hill, which is part of the Cotswolds AONB, and is approximately 540m at the closest point from the Bredon Hill SAC.

4.52 The landscape character of the Avon and Carrant Brook Strategic Corridor is made up of the secluded pastoral landscapes of the Riverside Meadows landscape type (characterised by meandering, tree-lined rivers, flanked by alluvial meadows which are defined by hedge and ditch boundaries), the open, rolling landscapes of the Principal Village Farmlands (characterised by a nucleated pattern of expanded rural villages, surrounded by large arable fields, often subdivided into a series of smaller plots), and the planned lowland agricultural landscapes of the Village Farmlands with Orchards (an intensively cultivated landscape characterised by large cultivated fields and dominant orchard land use).²⁶¹

257 The priorities have been developed in consultation with multiple stakeholders through a Minerals Green Infrastructure Steering Group which has been active throughout the development of the Minerals Local Plan to assist with embedding the Green Infrastructure approach. The group consists of Historic England (the Historic Buildings and Monuments Commission for England which was known as English Heritage until April 2015); Environment Agency; Forestry Commission; Herefordshire & Worcestershire Earth Heritage Trust; Natural England; Nature After Minerals/RSPB; Worcestershire Wildlife Trust, as well as officers from the following teams within Worcestershire County Council: Strategic Planning & Environmental Policy; Worcestershire Archive and Archaeology Service; Development Management; Water/flooding (Lead Local Flood Authority); Countryside Access & Recreation.

258 Data relating to various green infrastructure components can be viewed on the interactive minerals mapping tool at www.worcestershire.gov.uk/minerals.

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

260 Through ROPMs and planning applications to alter the conditions imposed as part of existing planning permissions.

261 See Worcestershire's *Landscape Character Assessment* maps and guidance at www.worcestershire.gov.uk/lca.

- 4.53 Agricultural land uses dominate much of this corridor, with 48.4% of the corridor being best and most versatile agricultural land,²⁶² and land use in the Principal Village Farmlands being very strongly based on cropping and horticulture, which is important to the local economy.²⁶³ Arable land uses and locally significant orchards also help to define the landscape character within the corridor. However, water shortages²⁶⁴ can present a challenge for businesses and key infrastructure in this corridor. There is also a high level of flood risk, with the corridor being affected by fluvial flooding from the River Avon as well as surface water and ground water flooding. As the corridor consists of flat valleys with wide floodplains away from the source of run-off generation, flood betterment opportunities are most likely to be measures associated with flood storage and floodplain connectivity.²⁶⁵ The majority of the watercourses in the corridor are not currently meeting Water Framework Directive targets for “good ecological status”.²⁶⁶
- 4.54 The Avon and Carrant Brook Strategic Corridor has significant potential to deliver river corridor enhancements and biodiversity action plan targets for both species and habitats, with the Severn and Avon Vales Biodiversity Delivery Area²⁶⁷ following the course of the River Avon through the corridor, and the majority of the corridor consisting of the “alluvial fenlands” or “river terraces” ecological zones where mineral working has the potential to rejuvenate the diversity of habitats and reintroduce wetlands to a largely drained and dry landscape.²⁶⁸ It has potential to provide wintering bird populations of the Severn Estuary Special Protection Area with food and shelter at times of flooding or other extreme weather when normal roosting and feeding sites are unavailable.
- 4.55 There are large numbers of designated heritage assets within the corridor, as well as large areas with very high archaeological potential. This includes extensive areas of Palaeolithic potential and Pleistocene faunal and environmental remains. Mineral working in this corridor has the potential to reveal and record geologically and historically significant information about the river patterns and environments in which the terraces of the River Avon were formed. Lowland areas are associated with complex, multi-period settlement sites with settlement enclosures surviving as earthworks on hilltop locations. Later prehistoric and Romano-British settlements are common on the more freely draining soils of the gravel terraces. The extant settlement pattern is medieval and post-medieval in origin and characterised by nucleated villages with some wayside settlement and estate farmsteads. Historic Landscape Character is reflected in the field patterns and hedgerow networks associated with enclosure during the 17th to 19th centuries of medieval open-fields and riverside pasture. There is a distinctive character of market gardening allotments and traditional orchard enclosures in the Vale of Evesham.
- 4.56 The network of public rights of way in the Avon and Carrant Brook Strategic Corridor is less dense than in other parts of the county, but the Wychavon Way long-distance path crosses the corridor. There are very few sites designated for their geological interest within the Avon and Carrant Brook Strategic Corridor.
- 4.57 Mineral development in the Avon and Carrant Brook Strategic Corridor would be well located to serve planned growth in the Worcester area, Evesham and Pershore,²⁶⁹ and proposed growth in Tewkesbury²⁷⁰. There are good links to the strategic highway network in the north of the corridor, although road transport may be more challenging in the south. The River Avon is navigable throughout the corridor, although constraints on the size of the locks at Tewkesbury may limit onward transport to the River Severn. Two rail lines cross the corridor, although opportunities to connect to them may be limited.

262 Based on Grade 1 and Grade 2 Agricultural Land, as the Provisional Agricultural Land Classification (1988) mapping does not distinguish between grade 3a and 3b land, and subsequent Post 1988 mapping is not comprehensive.

263 Worcestershire Local Enterprise Partnership (2014) *World Class Worcestershire: Our ten year plan for jobs, growth and the economy*.

264 Environment Agency (February 2013) *Warwickshire Avon abstraction licensing strategy* states that consumptive abstraction is only available 50% of the time.

265 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

266 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

267 Information about the Worcestershire Biodiversity Action Plans and Biodiversity Delivery Areas is available at <http://www.worcestershire.gov.uk/biodiversity>.

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

269 As proposed in the *South Worcestershire Development Plan* (adopted 2016).

270 As proposed in the *Gloucester, Cheltenham and Tewkesbury Joint Core Strategy 2011 – 2031* (adopted 2017).



Principal Village Farmlands landscape type

4.58 The Avon and Carrant Brook Strategic Corridor contains 33.1%²⁷¹ of the county’s terrace and glacial sand and gravel resources and 1.1%²⁷² of the county’s Mercia Mudstone clay resource. The corridor is also widely underlain by clays of the Lias Group which are not considered to be a locally or nationally important mineral resource. Sand and gravel is known to have been worked at eight sites²⁷³ in the Avon and Carrant Brook Strategic Corridor in the past, but there are currently no extant workings²⁷⁴ within the Avon and Carrant Brook Strategic Corridor.

4.59 Mineral development in this corridor is most likely to be relatively shallow sand and gravel workings, with river terrace sand and gravel deposits in the corridor averaging 2.8 metres in depth. In some cases it may be possible to restore land to previous levels through the importation of materials, however this likely to be limited by the availability of suitable materials

in the area, the current regulatory regime, the need to ensure that worked land is reclaimed at the earliest opportunity and the need to provide high-quality restoration.²⁷⁵ It is therefore likely that parts of a site might be restored to previous levels, but some areas of lower land may be necessary.

4.60 As the sand and gravel deposits in the Avon and Carrant Brook Corridor are believed to be relatively thin and dispersed,²⁷⁶ this may mean that centralised processing plant fed by multiple “satellite sites” working smaller deposits could be viable in this corridor. This could provide an efficient use of land and economic benefits through reducing the investment required in plant at individual working sites, as well as making the most of the relatively limited opportunities to access the strategic transport network in this corridor.

271 By area, based on the key and significant resources identified in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018).

272 By area, based on the Mercia Mudstone resource after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

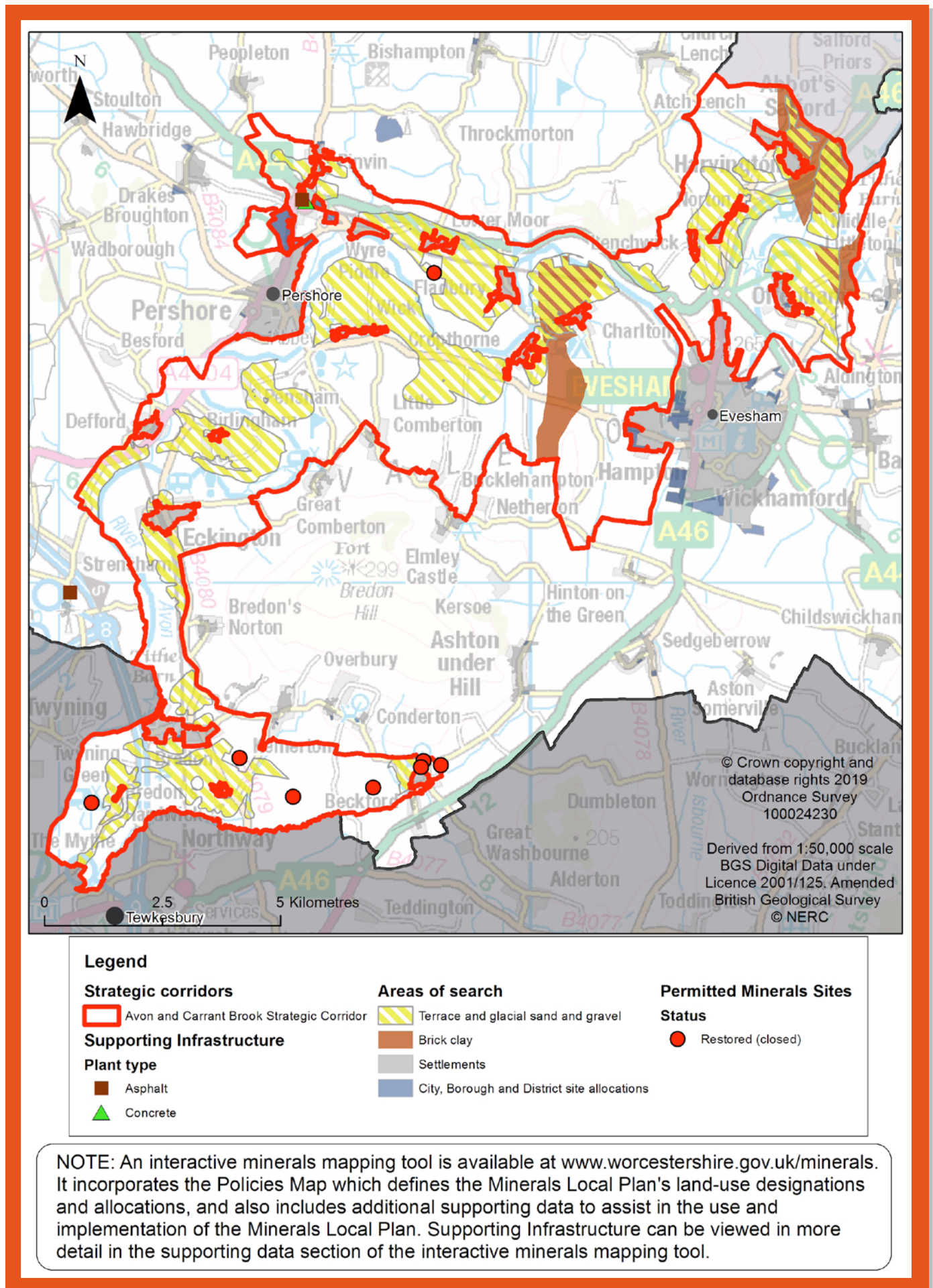
273 Lower Moor Quarry, Court Farm, Beckford Quarry, Costwold Plant Hire workings, Carrant Brook Pit, Aston Mill, Kemerton Quarry and Bredon’s Hardwick Quarry. These can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

274 At 31st December 2016.

275 See policy MLP 17 (Prudent Use of Resources).

276 Garrett (1970) *The Sand and Gravel Resources of the Terrace Deposits of the River Avon from Tewkesbury to Harvington*.

Figure 4.2. Avon and Carrant Brook Strategic Corridor



Policy MLP 4: Avon and Carrant Brook Strategic Corridor

Contributing to:

Objectives MO2, MO3, MO4, MO5

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 green infrastructure networks.

A level of technical assessment appropriate to the proposed development will be required to demonstrate how, throughout its lifetime, the development will optimise opportunities to deliver the following green infrastructure priorities for the Avon and Carrant Brook Strategic Corridor:

- a) create wetland features such as wet pasture, water meadows, reedbed, fen, marsh, and ditches during both working phases and as part of restoration and after-use, including where characteristic arable, cropping or horticultural land uses or orchards are incorporated;
- b) conserve, enhance and restore characteristic hedgerow patterns, and linear tree belts along hedge and ditch lines and along the banks of watercourses;
- c) link, extend and enhance the network of public rights of way and other public access routes, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area;
- d) in the Principal Village Farmlands and Village Farmlands with Orchards landscape types, conserve, enhance and restore lines of hedgerow fruit trees to define medium- to large-scale fields.

Where significant deviation from these priorities is proposed, this will only be considered appropriate where robust justification is provided to demonstrate that the proposal will deliver specific local economic, social and/or environmental benefits, either through or alongside appropriate multifunctional green infrastructure measures, which demonstrably outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.61 Policy MLP 4 sets the priorities for the delivery of multifunctional green infrastructure in the Avon and Carrant Brook Strategic Corridor. Each of the priorities for the corridor will contribute to multiple green infrastructure components, as well as climate change adaptation and mitigation.

4.62 The corridor priorities can be integrated and delivered alongside each other, and in most cases it will be appropriate to incorporate some elements of each priority. However, in some cases it may not be possible or desirable to deliver all priorities on a single site when the size of the site or other local factors are taken into account, and deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.63 The technical assessment required by policy MLP 4 will be expected set out the considerations which have led to the proposed design of the site and the working, restoration and aftercare schemes, taking account of issues and opportunities identified through the consideration of policy MLP 3 (Green Infrastructure) and policies MLP 17 to MLP 30 (Development Management). The assessment should clearly specify how the proposed development will contribute to the green infrastructure priorities at each stage of the site's life, and why the proposed balance of priorities is considered to optimise the opportunities for delivering the priorities in that location. Where there is strong evidence to demonstrate that 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.

Create wetland features such as wet pasture, water meadows, reedbed, fen, marsh, and ditches during both working phases and as part of restoration and after-use, including where characteristic arable, cropping or horticultural land uses or orchards are incorporated

- 4.64 Wetland creation will aid natural flood management, flood storage and floodplain connectivity, as well as improving water quality. Incorporating floodplain and riverside vegetation can help to slow overland flows, increase infiltration and interception of rain and slow the velocity of water entering rivers. It can deliver biodiversity gains and Biodiversity Action Plan priorities by creating, linking and extending habitats, and will contribute to climate change resilience. It can also enhance the local landscape character and in some cases reflect historic land uses and land management techniques. The creation of wetland habitats on individual sites will largely be dependent on the local hydrology, including any seasonal changes.
- 4.65 Wetland features in the Avon and Carrant Brook Strategic Corridors should predominantly be wet pasture, meadows, reedbed, fen, marsh, and ditches, rather than open water. However, if open waterbodies are proposed, they should be designed to have serpentine and sinuous edges with significant shallow areas, as broad drawdown zones will encourage marginal habitats including fen, marsh and reedbed to establish. 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.
- 4.66 Wet pastures would contribute positively to the character of the Riverside Meadows landscape type and would help to deliver the aims of the Severn and Avon Vales Biodiversity Delivery Area. 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 wetland habitats will be welcomed.

- 4.67 In the Principal Village Farmlands and Village Farmlands with Orchards landscape types, where agricultural land quality is often high, arable land-uses (including cropping²⁷⁷ and horticulture²⁷⁸) can contribute positively to the character and local distinctiveness of the landscape, as well as to the local economy. Conserving and restoring traditional orchards is particularly important in the Village Farmlands with Orchards landscape type and around villages where they form part of their local distinctiveness, and there should be an emphasis on the fruit type and varieties associated with the specific locality of the proposal. Restoration to these types of agricultural land uses can contribute to the economic vitality of the area, and deliver net biodiversity gain and benefits to the water environment where wetland habitats are integrated. Wetland habitats should be incorporated as wet field margins, ponds, pools and scrapes which would provide valuable habitats and natural water storage. In areas where agricultural land quality is lower, the creation of more extensive wetland habitats might be appropriate.
- 4.68 Wetland features should be delivered during working phases as well as during the restoration of sites. The site design, levels and phasing of workings should optimise opportunities for these features and habitats. Simple measures such as securely installing woody debris can assist the transfer of water from the river to the floodplain to increase floodplain storage volumes, or slow down flows within the channel.²⁷⁹ *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*²⁸⁰ provides useful information about the types of wetland habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory²⁸¹ should be referred to when considering the opportunities to link and extend existing habitats.

277 Cropping is the dominance of arable farming characterised by field vegetables and/or market gardening.

278 Horticulture is the dominance of arable farming characterised by growing fruits, vegetables, flowers, or ornamental plants.

279 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

280 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.

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

4.69 In some cases, a stand-off zone may 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 could 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.

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

4.70 Linear tree belts along ditches, watercourses and in hedgerows, and the restoration of hedgerows²⁸² will contribute to the structure and character of the landscape, the local distinctiveness of the area and the legibility of historic enclosure patterns in the landscape. Incorporating hedgerows and trees along watercourses can also help to improve biological and chemical water quality and reduce flood risk by slowing overland flows, increasing infiltration and interception of rain and slowing the velocity of water entering rivers. Tree belts and hedgerows can link and enhance habitats to provide an ecological network of connected habitats contributing to species resilience.

4.71 The conservation and enhancement of primary hedgerow patterns may 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.

4.72 Tree belts and hedgerow patterns should be conserved, enhanced and restored across all phases of the site’s life, and consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

Link, extend and enhance the network of public rights of way and other public access routes, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area

4.73 Linking, extending and enhancing the network of public access routes will increase opportunities

for informal access and recreation, contributing to the health and well-being of local communities, and can preserve or restore historic or cultural links. It also offers opportunities to help people to interpret features and characteristics in the landscape and understand how they interact. This can help to strengthen sense of place through increased understanding of the geodiversity, heritage and character of the area. In some cases, routes adjacent to or with views of particular features may be sufficient to increase legibility and understanding of the feature. In other cases, signage or information boards may be appropriate.

4.74 Opportunities to link, extend and enhance routes should be considered across all phases of the site’s life. Measures such as providing viewing or stopping points, increasing accessibility by replacing stiles with gates, or improving the surfacing, drainage or management of the route are likely to be appropriate, as well as linking or extending existing public rights of way and other public access routes, including long-distance recreation routes or planned and proposed Sustrans routes. Consideration of appropriate routes and opportunities to increase the legibility and understanding of the area should be integral to the design and layout of the site and any restoration proposals.

In the Principal Village Farmlands and Village Farmlands with Orchards landscape types, conserve, enhance and restore lines of hedgerow fruit trees to define medium- to large-scale fields

4.75 Lines of hedgerow fruit trees to define the large fields of the village farmlands will contribute to conserving and enhancing landscape character, as well as providing locally appropriate habitats. Lines of hedgerow fruit trees, particularly damson, are a distinctive local feature, with some scattered tree cover along watercourses.

4.76 For sites in the Principal Village Farmlands and Village Farmlands with Orchards landscape types, consideration should be given to the conservation, enhancement and restoration of hedgerow fruit trees across all phases of the site’s life. This should be integral to the design and layout of the site and any restoration proposals.

282 The primary hedgerow network consists of the hedgerows along roads, farm and parish boundaries, and the secondary hedgerow network is provided by the internal field boundaries.

Lower Severn Strategic Corridor

Characteristics of the corridor

- 4.77 The Lower Severn Strategic Corridor is identified in the Key Diagram (Figure 4.1) and shown in detail in Figure 4.3. Lower Severn Strategic Corridor. It covers 3,280 hectares of land, and broadly follows the course of the River Severn from south of Worcester to the county boundary with Gloucestershire near Tewkesbury.
- 4.78 The landscape character of the Lower Severn Strategic Corridor is made up of the secluded pastoral landscapes of the Riverside Meadows landscape type (characterised by meandering, tree-lined rivers, flanked by alluvial meadows which are defined by hedge and ditch boundaries), the medium-scale, settled agricultural landscapes of the Settled Farmlands on River Terraces landscape type (where horticulture and cropping is the dominant land use, and fields are bounded by hedgerows, with tree cover largely concentrated in groups associated with dwellings), as well as a smaller area of the flat, low-lying, secluded pastoral landscape of the Wet Pasture Meadows landscape type (characterised by a regular pattern of hedged fields and ditches fringed by lines of willow and alder).²⁸³
- 4.79 Agricultural land uses dominate much of this corridor, with 33.7% of the corridor being best and most versatile agricultural land.²⁸⁴ The free-draining, highly fertile sandy brown soils in the Settled Farmlands on River Terraces support an arable land use dominated by cash crops and market gardening, and the extensive areas of waterside meadows have been used for seasonal grazing in the Riverside Meadows.
- 4.80 There is a high level of flood risk in the Lower Severn Strategic Corridor, from fluvial flooding from the River Severn as well as surface water and ground water flooding. As the corridor covers lower parts of the catchment, located amongst flat valleys, much of it forms part of the functional floodplain. Being away from the source of run-off generation, flood betterment opportunities are most likely to be measures associated with flood storage and floodplain connectivity.²⁸⁵ The majority of the watercourses in the corridor are
- 4.81 The Lower Severn Strategic Corridor has significant potential to deliver river corridor enhancements and biodiversity action plan targets for both species and habitats, with the Severn and Avon Vales Biodiversity Delivery Area²⁸⁷ covering the majority of the corridor as it follows the course of the River Severn. The whole of the corridor consists of the “alluvial fenlands” or “river terraces” ecological zones where mineral working has the potential to rejuvenate the diversity of habitats and reintroduce wetlands to a largely drained and dry landscape.²⁸⁸ It has potential to provide wintering bird populations of the Severn Estuary Special Protection Area with food and shelter at times of flooding or other extreme weather when normal roosting and feeding sites are unavailable.
- 4.82 The Lower Severn Strategic Corridor forms part of the principal area of known prehistoric and Romano-British settlement sites and landscapes in Worcestershire. The gravel terraces of the River Severn from Worcester southwards have revealed extensive remains of settlement, land use and funerary sites. The broader meanders of the river have preserved palaeochannels and peat deposits rich in palaeo-environmental remains, and have been shown by excavation to be a focus of riverside activity from the Neolithic period onwards. This is also an area of extensive Palaeolithic potential. Mineral working in this corridor has the potential to reveal and record geologically and historically significant information about the river patterns and environments in which the terraces of the River Severn were formed. Historic landscape character is strongly influenced by nucleated medieval and post-medieval settlements with associated wayside and estate farmsteads set within 17th to 19th century field systems along the river terraces.
- 4.83 Although there are not many sites designated for their geodiversity interest in the corridor, the southern part of the Lower Severn Strategic Corridor is within the Abberley and Malvern Hills Geopark²⁸⁹ and there is a cluster of geological Sites of Special Scientific Interest and Local Geological Sites close to the village of Clifton.

283 See Worcestershire's *Landscape Character Assessment* maps and guidance at www.worcestershire.gov.uk/lca.

284 Based on Grade 1 and Grade 2 Agricultural Land, as the Provisional Agricultural Land Classification (1988) mapping does not distinguish between grade 3a and 3b land, and subsequent Post 1988 mapping is not comprehensive.

285 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

286 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

287 Information about the Worcestershire Biodiversity Action Plans and Biodiversity Delivery Areas is available at <http://www.worcestershire.gov.uk/biodiversity>.

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

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

4.84 There is a good network of public rights of way in the corridor, and the Severn Way long-distance path runs throughout its length. However, there is also an identified need for a strategic recreation asset in the Lower Severn Strategic Corridor²⁹⁰ to provide an alternative destination for visitors to the Malvern Hills and to serve the new developments that are planned to the south and west of Worcester.

4.85 Mineral development in the Lower Severn Strategic Corridor would be well located to serve planned growth in the wider Worcester area, Malvern and Pershore,²⁹¹ and proposed growth in Tewkesbury²⁹². There are good links to the strategic highway network throughout the majority of the corridor, although road transport may be more challenging to the west of the River Severn. The River Severn is navigable throughout the corridor, but there are no railway lines in the corridor. The River Severn is already used to transport minerals, enabling sites with centralised processing plant with good connections to the strategic highway network to access material from smaller or more remote “satellite” sites. This is likely to continue to be a viable option for accessing smaller mineral deposits in the Lower Severn Strategic Corridor, alongside traditional large sites with their own processing plant, and could provide an efficient use of land and economic benefits through reducing the investment required in plant at individual working sites.

4.86 The Lower Severn Strategic Corridor contains 18.0%²⁹³ of the county’s terrace and glacial sand and gravel resources and 2.4%²⁹⁴ of the county’s Mercia Mudstone clay resource. Sand and gravel has been worked extensively²⁹⁵ in the Lower Severn Strategic Corridor. Clay was also worked in a borrow pit in the north of the corridor to provide material for Powick flood risk management scheme.

4.87 Mineral development in this corridor is most likely to be relatively shallow sand and gravel workings, with river terrace sand and gravel deposits in the corridor averaging 3.6 metres in depth. In some cases it may be possible to restore land to previous levels through the importation of materials, however this is likely to be limited by the availability of suitable materials in the area, the current regulatory regime, the need to ensure that worked land is reclaimed at the earliest opportunity and the need to provide high-quality restoration.²⁹⁶ It is therefore likely that parts of a site might be restored to previous levels, but some areas of lower land may be necessary.



Settled Farmlands on River Terrace Landscape Type

290 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.

291 As proposed in the *South Worcestershire Development Plan* (adopted 2016).

292 As proposed in the *Gloucester, Cheltenham and Tewkesbury Joint Core Strategy 2011 – 2031* (adopted 2017).

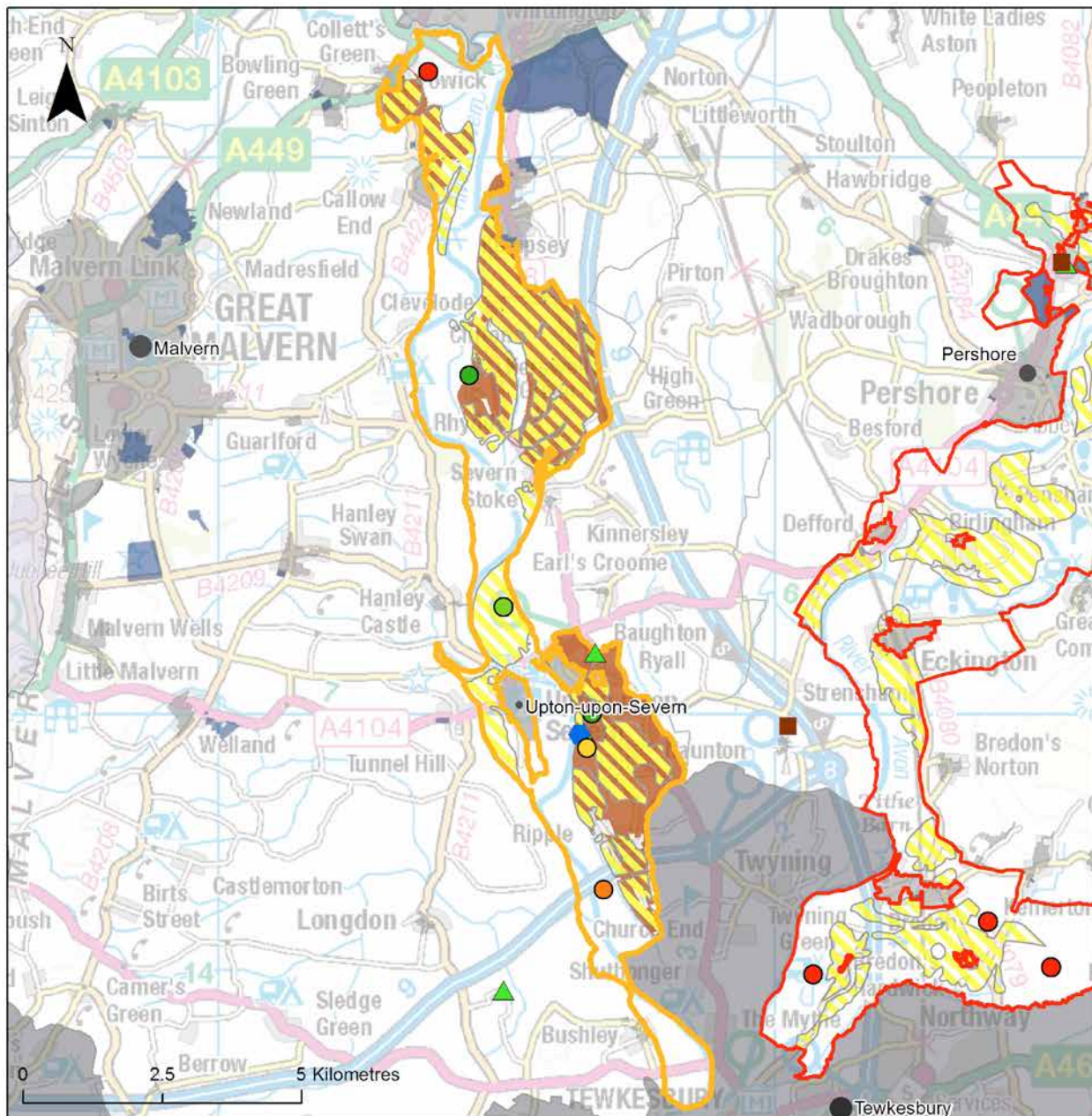
293 By area, based on the key and significant resources identified in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council’s background document *Location of development: screening and site selection methodology* (August 2018).

294 By area, based on the Mercia Mudstone resource after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

295 Sand and gravel has previously been worked at Ryall House Farm Quarry, and its processing plant has subsequently been used to process material from the adjacent area known as Saxons Lode, as well as material transported by barge from Ripple Quarry and Ryall’s Court Farm Quarry. Sand and gravel is also being worked at Clifton Quarry. These can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

296 See policy MLP 17 (Prudent Use of Resources).

Figure 4.3. Lower Severn Strategic Corridor



Legend

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> Settlements City, Borough and District site allocations Strategic corridors Avon and Carrant Brook Strategic Corridor Lower Severn Strategic Corridor | <p>Supporting Infrastructure</p> <p>Plant type</p> <ul style="list-style-type: none"> Asphalt Concrete Wharfage <p>Areas of search</p> <ul style="list-style-type: none"> Terrace and glacial sand and gravel Brick clay | <p>Permitted Minerals Sites (Spring 2019)</p> <p>Status</p> <ul style="list-style-type: none"> Active Permitted (not commenced) Undergoing restoration Restored - in aftercare Restored (closed) |
|---|---|---|

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100024230

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BGS Digital Data under
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British Geological Survey
© NERC

NOTE: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan. Supporting Infrastructure can be viewed in more detail in the supporting data section of the interactive minerals mapping tool.

Policy MLP 5: Lower Severn Strategic Corridor

Contributing to:

Objectives MO2, MO3, MO4, MO5

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 green infrastructure networks.

A level of technical assessment appropriate to the proposed development will be required to demonstrate how, throughout its lifetime, the development will optimise opportunities to deliver the following green infrastructure priorities for the Lower Severn Strategic Corridor:

- a) create wetland features such as fen and marsh, wet grassland, reedbed and lowland meadows during both working phases and as part of restoration and after-use, including where the following characteristic agricultural land uses are incorporated:
 - cropping and horticulture in the Settled Farmlands on River Terraces landscape type;
 - pastoral land use in the Riverside Meadows and Wet Pasture Meadows landscape types;
- b) conserve, enhance and restore characteristic hedgerow patterns and tree cover along watercourses and streamlines;
- c) create accessible semi-natural green space, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area.

Where significant deviation from these priorities is proposed, this will only be considered appropriate where robust justification is provided to demonstrate that the proposal will deliver specific local economic, social and/or environmental benefits, either through or alongside appropriate multifunctional green infrastructure measures, which demonstrably outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.88 Policy MLP 5 sets the priorities for the delivery of multifunctional green infrastructure in the Lower Severn Strategic Corridor. Each of the priorities for the corridor will contribute to multiple green infrastructure components, as well as climate change adaptation and mitigation.

4.89 The corridor priorities can be integrated and delivered alongside each other, and in most cases it will be appropriate to incorporate some elements of each priority. However, in some cases it may not be possible or desirable to deliver all priorities on a single site when the size of the site or other local factors are taken into account, and deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.90 The technical assessment required by policy MLP 5 will be expected to set out the considerations which have led to the proposed design of the site and the working, restoration and aftercare schemes, taking account of issues and opportunities identified through the consideration of policy MLP 3 (Green Infrastructure) and policies MLP 17 to MLP 30 (Development Management). The assessment should clearly specify how the proposed development will contribute to the green infrastructure priorities at each stage of the site's life, and why the proposed balance of priorities is considered to optimise the opportunities for delivering the priorities in that location. Where there is strong evidence to demonstrate that 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.

Create wetland features such as fen and marsh, wet grassland, reedbed and lowland meadows during both working phases and as part of restoration and after-use, including where characteristic agricultural land uses are incorporated

4.91 Wetland creation will aid natural flood management, flood storage and floodplain connectivity, as well as improving water quality. Incorporating floodplain and riverside vegetation can help to slow overland flows, increase infiltration and interception of rain and slow the velocity of water entering rivers, with the potential to reduce flood risk by increasing storage volumes and encouraging overland flows in less vulnerable floodplain areas. It can deliver biodiversity gains and Biodiversity Action Plan priorities by creating, linking and extending habitats, and will contribute to climate change resilience. Wetland creation can also enhance the local landscape character and in some cases reflect historic land uses and land management techniques. The creation of wetland habitats on individual sites will largely be dependent on the local hydrology, including any seasonal changes.

4.92 Wetland features in the Lower Severn Strategic Corridors should predominantly be wet pasture, meadows, reedbed, fen, marsh, and ditches, rather than open water. However, if open waterbodies are proposed, they should be designed to have serpentine and sinuous edges with significant shallow areas, as broad drawdown zones will encourage marginal habitats including fen, marsh and reedbed to establish. The design of wetland habitats should consider the landscape character, retaining the local scale and pattern of enclosure, and opportunities to enhance the landscape and biodiversity benefits of the ditches and watercourses.

4.93 Wet pastures would contribute positively to the character of the Riverside Meadows and Wet Pasture Meadows landscape types 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, and permanent pasture is an important characteristic in these landscape types which is under pressure from increasing arable land uses. Conserving and restoring areas of permanent pasture will not only contribute to maintaining and enhancing landscape character and sense of place, but will also protect these habitats to provide an ecological network of connected habitats contributing to species resilience, and could also protect and enhance the setting of heritage assets. Returning land to pasture rather than arable uses in these landscape types could also help to minimise fragmentation of hedgerow structure by restoring their functionality. 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 wetland habitats will be welcomed.

4.94 In the Settled Farmlands on River Terraces landscape type, where agricultural land quality is often high, arable land-uses (including cropping²⁹⁷ and horticulture²⁹⁸) can contribute positively to the character and local distinctiveness of the landscape. Restoration to these types of agricultural land uses can contribute to the economic vitality of the area, and deliver net biodiversity gain and benefits to the water environment where wetland habitats are integrated. Wetland habitats should be incorporated as wet field margins, ponds, pools and scrapes which would provide valuable habitats and natural water storage. In areas where agricultural land quality is lower, the creation of more extensive wetland habitats might be appropriate.

²⁹⁷ Cropping is the dominance of arable farming characterised by field vegetables and/or market gardening.

²⁹⁸ Horticulture is the dominance of arable farming characterised by growing fruits, vegetables, flowers, or ornamental plants.

4.95 Wetland features should be delivered during working phases as well as during the restoration of sites. The site design, levels and phasing of workings should optimise opportunities for these features and habitats. Simple measures such as securely installing woody debris can assist the transfer of water from the river to the floodplain to increase floodplain storage volumes, or slow down flows within the channel.²⁹⁹ *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*³⁰⁰ provides useful information about the types of wetland habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory³⁰¹ should be referred to when considering the opportunities to link and extend existing habitats.

4.96 In some cases, a stand-off zone may 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 could 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.

Conserve, enhance and restore characteristic hedgerow patterns and tree cover along watercourses and streamlines

4.97 Tree cover along watercourses and streams, and the restoration of characteristic hedgerow patterns³⁰² will contribute to the structure and character of the landscape, the local distinctiveness of the area and the legibility of historic enclosure patterns in the landscape, and could enhance the setting of heritage assets. Incorporating trees along watercourses can also help to improve biological and chemical water quality and reduce flood risk by slowing overland flows, increasing infiltration and interception of rain and slowing the velocity of water entering rivers. Trees and hedgerows can link and enhance habitats to provide an ecological network of connected habitats contributing to species resilience.

4.98 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.

4.99 In the Riverside Meadows landscape type, the conservation and enhancement of hedgelines should contribute to the secluded pastoral landscape and continuous tree cover along watercourses. Wet Pasture Meadows are also characterised by tree patterns along linear features and a regular pattern of hedged fields and ditches. Typical species in these landscape types are alder and willow. In the Settled Farmlands on River Terrace landscape type, sub-regular fields are bounded by hedgerows, with tree cover largely concentrated in the vicinity of settlement and in association with watercourses.

4.100 The conservation and enhancement of primary hedgerow patterns may also help to protect long-distance views from the Cotswolds AONB and the Malvern Hills AONB, and the special characteristics of these AONBs and their settings should be considered.

4.101 Tree cover and hedgerows should be conserved, enhanced and restored across all phases of the site's life, and consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

Create accessible semi-natural green space, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area

4.102 Creating accessible semi-natural green space will increase opportunities for informal access and recreation, contributing to the health and well-being of local communities. It also offers opportunities to help people to interpret features and characteristics in the landscape and understand how they interact. This can help to strengthen sense of place through increased understanding of the geodiversity, heritage and character of the area.

299 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.
 300 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.
 301 See *Worcestershire Habitat Inventory* information at http://www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.
 302 The primary hedgerow network consists of the hedgerows along roads, farm and parish boundaries, and the secondary hedgerow network is provided by the internal field boundaries.



4.103 In some cases, spaces or routes adjacent to or with views of particular features may be sufficient to increase legibility and understanding of the feature. In other cases, signage or information boards may be appropriate. The southern part of the Lower Severn Strategic Corridor is within the Abberley and Malvern Hills Geopark,³⁰³ and 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 both the accessible semi-natural green space created and the wider Geopark.

4.104 To be in keeping with the landscape character of the Lower Severn Strategic Corridor, accessible semi-natural green spaces or informal recreation sites should integrate wetland features and characteristic hedgerow, tree cover and field patterns. The topography and landform of the site should be considered in order to create an enjoyable and distinctive visitor experience, taking account of the long-term management requirements of the site.

4.105 There is an identified need for a strategic or sub-regional scale recreation asset of at least 100ha in the vicinity of the Lower Severn Strategic Corridor.³⁰⁴ The inclusion of accessible semi-natural green space at a number of mineral developments could help to facilitate the provision of a strategic or sub-regional scale asset, or there may be opportunities for it to be provided by a single large site.

4.106 Consideration should be given to the phasing of working and restoration in order to allow safe access to semi-natural green space to be delivered as early as possible in the site's life, and proposals should give full consideration to whether the site could contribute to the creation of a strategic or sub-regional scale recreation asset. Any associated built development, such as to provide visitor facilities, is likely to require separate planning permission from the relevant Local Planning Authority.

³⁰³ More information about the Abberley and Malvern Hills Geopark is available at <http://geopark.org.uk/>

³⁰⁴ Sites of over 100ha are classified as strategic or county level recreational sites, and sites of over 500ha are classified as sub-regional scale recreational sites. See Worcestershire Green Infrastructure Partnership's *Green Infrastructure Strategy 2013 – 2018* and Green Infrastructure Framework Document 3, available at www.worcestershire.gov.uk/GI.

North East Worcestershire Strategic Corridor Characteristics of the corridor

- 4.107 The North East Worcestershire Strategic Corridor is identified in the Key Diagram (Figure 4.1) and shown in detail in Figure 4.4. North East Worcestershire Strategic Corridor. It covers 3,345 hectares of land, extending around the east and north of Bromsgrove up to Clent.
- 4.108 The landscape character of the North East Worcestershire Strategic Corridor is made up of the secluded small- to medium-scale, settled agricultural landscapes of the Principal Settled Farmlands landscape type (characterised by scattered farms, relic commons and hedged fields with thinly scattered hedgerow trees and groups of trees around dwellings), the small-scale rolling lowland, settled agricultural landscapes of the Settled Farmlands with Pastoral Land Use landscape type (characterised by hedged fields and streamside trees) and the open, formal landscapes of the Enclosed Commons landscape type (characterised by large fields of regular outline, straight field boundaries, and estate plantations).³⁰⁵
- 4.109 Although only 18.6% of the corridor is classed as best and most versatile agricultural land,³⁰⁶ agricultural land uses are prevalent in much of this corridor; predominantly pastoral land use in the Settled Farmlands with Pastoral Land Use and a mixed agricultural land use being inherent to both the Principal Settled Farmlands and Enclosed Commons landscape types. Recent increases in arable dominance are evident, leading to the demise of the hedgerow structure which is critical to the character of these landscapes.
- 4.110 There is a high level of flood risk, with the corridor being affected by fluvial flooding from the River Salwarpe, the Blakedown Brook, the River Arrow and the Spadesbourne Brook as well as surface water and ground water flooding. As the corridor predominantly covers the upper parts of the catchment, with steep valleys which lead to generation of run-off, flood betterment is most likely to be achieved through the control and attenuation of run-off.³⁰⁷ The majority of the watercourses in the corridor are not currently meeting Water Framework Directive targets for

“good ecological status”.³⁰⁸ There are multiple Source Protection Zones designated within the corridor.

- 4.111 Almost all of the North East Worcestershire Strategic Corridor consists of the “forest sandstones” ecological zone where mineral working has the potential for the creation of scarce habitats of high conservation value including lowland heathland, acid grassland and scrub, or rare mire and bog communities in damper areas.³⁰⁹
- 4.112 The North East Worcestershire Strategic Corridor is associated with areas of Palaeolithic potential along watercourses. Evidence of later prehistoric and Romano-British settlement is sparse and the potential is unknown although there is evidence of lowland settlement with hilltop settlements in the wider setting. Extant settlements are of medieval and post-medieval origin with predominantly dispersed, wayside villages, hamlets and farmsteads. This area is also characterised as a landscape of medieval moats, some of which have farmsteads located within their bounds. Historic Landscape Character is broadly a mix of post-medieval piecemeal enclosure and later field patterns of land enclosed from former heathland and woodland. Areas of ridge and furrow earthworks point to the once large-scale occurrence of medieval open fields.



Principal Settled Farmlands landscape type

³⁰⁵ See Worcestershire's *Landscape Character Assessment* maps and guidance at www.worcestershire.gov.uk/lca.

³⁰⁶ Based on Grade 1 and Grade 2 Agricultural Land, as the Provisional Agricultural Land Classification (1988) mapping does not distinguish between grade 3a and 3b land, and subsequent Post 1988 mapping is not comprehensive.

³⁰⁷ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

³⁰⁸ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

³⁰⁹ Worcestershire County Council, *Biodiversity and mineral sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*, available at www.worcestershire.gov.uk/mineralsbackground.

- 4.113 The network of public rights of way is more sparse in the east of the corridor than in the west. There is an identified need for a strategic recreation asset in or near to the North East Worcestershire Strategic Corridor to provide an alternative destination for visitors to the Lickey Hills and Clent Hills.³¹⁰
- 4.114 Mineral development in the North East Worcestershire Strategic Corridor would be well located to serve planned growth in Bromsgrove,³¹¹ Redditch,³¹² Droitwich Spa³¹³ and the West Midlands conurbation. There are good links to the strategic highway network throughout the majority of the corridor. The Worcester and Birmingham Canal skirts the south-eastern edge of the corridor and one railway line runs through it, although opportunities to connect to them may be limited.
- 4.115 The majority of the North East Worcestershire Strategic Corridor is within the Green Belt. Mineral development is not inappropriate within the Green Belt, provided it takes place in a way which preserves its openness and does not conflict with the purposes of including land within the Green Belt.³¹⁴ Minerals development also has the potential to enhance the beneficial use of the Green Belt³¹⁵ through providing enhanced public access and recreation opportunities, enhancing landscapes, visual amenity and biodiversity, and improving damaged and derelict land.
- 4.116 The North East Worcestershire Strategic Corridor contains 4.3%³¹⁶ of the county's terrace and glacial sand and gravel resources, 17.4%³¹⁷ of the county's solid sand resources (including 13%³¹⁸ of the Wildmoor Sandstone Formation which contains silica sand resources), 0.2%³¹⁹ of the county's Mercia Mudstone clay resource, and four³²⁰ historic building stone sites. Sand and gravel (primarily solid sand) has been worked extensively³²¹ and some silica sand has been worked³²² in the North East Worcestershire Strategic Corridor.
- 4.117 Working in this corridor is therefore most likely to be for the relatively deep solid sands, which average 112.6 metres in depth in this corridor. Although in some cases it may be possible to work these resources to a significant depth and to restore land to previous levels through the importation of materials, it is unlikely that it will be possible to work these resources to their full depth. The depth of working is likely to be limited by a combination of the availability of suitable materials in the area, the regulatory regime relating to landfilling, the need to ensure that worked land is reclaimed at the earliest opportunity and the need to provide high-quality restoration.³²³ It is therefore likely that sites in this corridor may not be worked as deeply as they have been previously, or that sites will need to be sensitively designed so that they are worked and restored to include some areas of lower land rather than restoring the whole site to previous levels.

310 The need for a strategic recreation asset is identified in 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 Framework 3 document suggests that this could be done through extending the green corridor and publicly-accessible open space east of 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.

311 As proposed in the *Bromsgrove District Plan 2011-2030*.

312 As proposed in the *Borough of Redditch Local Plan No.4 2011-2030*.

313 As proposed in the *South Worcestershire Development Plan 2006-2030*.

314 See policy MLP 18 (Green Belt) and Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, section 13.

315 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 141 states that "Once Green Belts have been defined, local planning authorities should plan positively to enhance their beneficial use, such as looking for opportunities to provide access; to provide opportunities for outdoor sport and recreation; to retain and enhance landscapes, visual amenity and biodiversity; or to improve damaged and derelict land".

316 By area, based on the key and significant resources identified in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018).

317 By area, based on the key and significant resources identified in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018).

318 By area, based on the Wildmoor Sandstone Formation resource after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

319 By area, based on the Mercia Mudstone resource after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

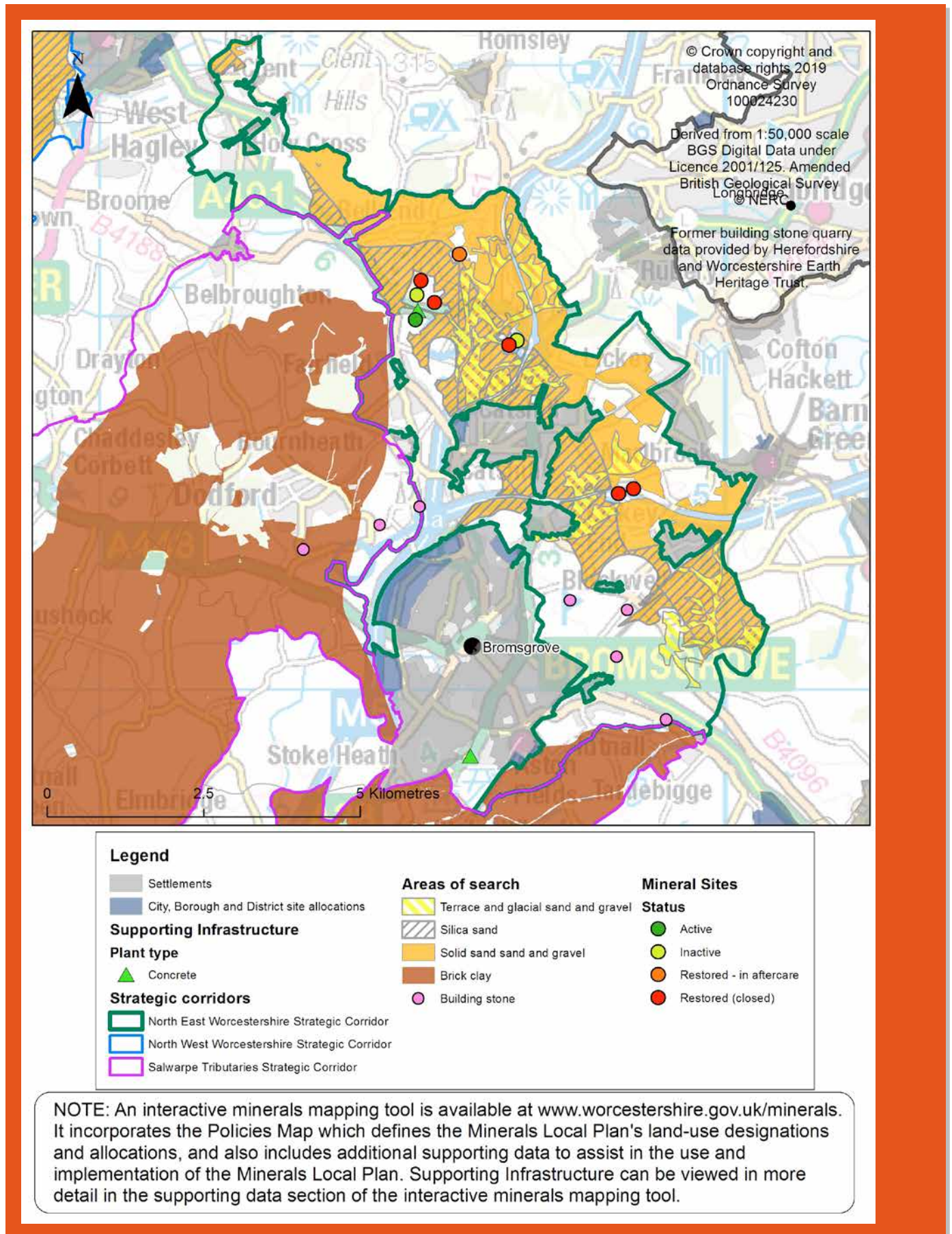
320 Based on the remaining historic building stone sites identified by Herefordshire and Worcestershire Earth Heritage Trust's project "A Thousand Years of Building with Stone" (<http://www.buildingstones.org.uk/>) after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

321 Sand and gravel has previously been worked at Chadwich Lane Quarry, Pinches Quarry 1, Pinches 2, and Shepley Quarry. At the plan's baseline date of 31st December 2016, Pinches 3 and Sandy Lane Quarry had permitted reserves but were inactive during 2016, and Wildmoor Quarry was active. These can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

322 Silica sand has been worked at Sandy Lane Quarry and Wildmoor Quarry. These can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

323 See policy MLP 17 (Prudent Use of Resources).

Figure 4.4. North East Worcestershire Strategic Corridor



Policy MLP 6: North East Worcestershire Strategic Corridor

Contributing to:

Objectives MO2, MO3, MO4, MO5

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 green infrastructure networks.

A level of technical assessment appropriate to the proposed development will be required to demonstrate how, throughout its lifetime, the development will optimise opportunities to deliver the following green infrastructure priorities for the North East Worcestershire Strategic Corridor:

- a) conserve and restore permanent pasture, incorporating lowland heathland, acid grassland and scrub habitats;
- b) conserve, enhance and restore characteristic hedgerow patterns and tree cover along watercourses and streamlines;
- c) slow the flow of water in upper reaches of the catchment;
- d) create accessible semi-natural green space, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area.

Where significant deviation from these priorities is proposed, this will only be considered appropriate where robust justification is provided to demonstrate that the proposal will deliver specific local economic, social and/or environmental benefits, either through or alongside appropriate multifunctional green infrastructure measures, which demonstrably outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.118 Policy MLP 6 sets the priorities for the delivery of multifunctional green infrastructure in the North East Worcestershire Strategic Corridor. Each of the priorities for the corridor will contribute to multiple green infrastructure components, as well as climate change adaptation and mitigation.

4.119 The corridor priorities can be integrated and delivered alongside each other, and in most cases it will be appropriate to incorporate some elements of each priority. However, in some cases it may not be possible or desirable to deliver all priorities on a single site when the size of the site or other local factors are taken into account, and deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.120 The technical assessment required by policy MLP 6 will be expected set out the considerations which have led to the proposed design of the site and the working, restoration and aftercare schemes, taking account of issues and opportunities identified through the consideration of policy MLP 3 (Green Infrastructure) and policies MLP 17 to MLP 30 (Development Management). The assessment should clearly specify how the proposed development will contribute to the green infrastructure priorities at each stage of the site's life, and why the proposed balance of priorities is considered to optimise the opportunities for delivering the priorities in that location. Where there is strong evidence to demonstrate that 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.

Conserve and restore permanent pasture, incorporating lowland heathland, acid grassland and scrub habitats

4.121 Permanent pasture is an important characteristic of the Principal Settled Farmlands and Settled Farmlands with Pastoral Land Use landscape types, but it is under pressure from increasing arable land uses. Conserving and restoring areas of permanent pasture will not only contribute to maintaining and enhancing landscape character and sense of place, but will also contribute to a resilient and functional ecological network of connected habitats, and could also protect and enhance the setting of heritage assets. Returning land to pasture rather than arable uses could also help to minimise any further fragmentation of hedgerow structure by restoring their functionality.

4.122 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. 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. Exposed sandy soils at mineral sites provide ideal conditions for heathland and scrub as well as acid grassland habitats, or rare mire and bog communities in damper areas. Heathland and scrub can develop naturally on bunds and mounds and other areas of exposed sandy soils during working phases, giving opportunities to deliver biodiversity benefits throughout the life of the site. These should also be incorporated into field margins as sites are restored, particularly where there are opportunities to buffer and connect existing habitats. The design and phasing of workings and soil management should ensure the retention of low-nutrient sandy soils for the creation of these habitats.

4.123 *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*³²⁴ provides useful information about the types of habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory³²⁵ should be referred to when considering the opportunities to link and extend existing habitats.

4.124 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.

4.125 The conservation and restoration of permanent pasture, and the incorporation of lowland heathland, acid grassland and scrub habitats, should take place across all phases of the site's life, and consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

Conserve, enhance and restore characteristic hedgerow patterns and tree cover along watercourses and streamlines

4.126 Tree cover along watercourses and streams, and the restoration of characteristic hedgerow patterns³²⁶ will contribute to the structure and character of the landscape, the local distinctiveness of the area and the legibility of historic enclosure patterns in the landscape, and could enhance the setting of heritage assets. Incorporating trees along watercourses can also help to slow overland flows, increase infiltration and interception of rain and slow the velocity of water entering rivers. Trees and hedgerows can link and enhance habitats to provide a resilient and functional ecological network of connected habitats contributing to species resilience.

³²⁴ 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.

³²⁵ See *Worcestershire Habitat Inventory* information at http://www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.

³²⁶ The primary hedgerow network consists of the hedgerows along roads, farm and parish boundaries, and the secondary hedgerow network is provided by the internal field boundaries.

4.127 Each of the component landscape types in the North East Worcestershire Strategic Corridor has its own characteristic hedgerow and tree cover patterns, and development proposals will be expected to respect these:

- In the Principal Settled Farmlands landscape type, there is an irregular enclosure pattern with hedges defining the small- and medium-sized fields. 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. Woodland is not characteristic of this landscape type.
- In the Settled Farmlands with Pastoral Land Use landscape type, there is a sub-regular enclosure pattern with hedges defining the small- and medium-sized fields. Hedgerow trees are particularly important, together with linear tree cover associated with watercourses. These existing patterns of hedgerows and 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. Woodland is not characteristic of this landscape type.
- In the Enclosed Commons landscape type, there is a regular, geometric pattern of enclosure with straight hedged boundaries. Tree cover along watercourses can contribute significantly to the landscape structure but hedgerow tree cover is generally far less significant than in the other landscape types of the North East Worcestershire Strategic Corridor. Hedgerow tree planting is not encouraged in the Enclosed Commons landscape. Instead, priority should be given to restoring the distinctive hedgerow pattern and trees along watercourses. Discrete blocks of estate woodland plantations are present in this landscape type.

4.128 English elm, hawthorn, blackthorn and damson are the principal component hedgerow tree species in the North East Worcestershire Strategic Corridor. In the southern part of the corridor which overlaps the Forest of Feckenham Biodiversity Delivery Area, holly may be found locally and local varieties of fruit trees could be appropriate.

4.129 Tree cover and hedgerows should be conserved, enhanced and restored across all phases of the site's life, and consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

Slow the flow of water in upper reaches of the catchment

4.130 The control and attenuation of run-off in the upper parts of the catchments covered by the North East Worcestershire Strategic Corridor will have the potential to reduce downstream flood risk and increase drought resilience.³²⁷ It could also improve water quality and riverine habitats, and could help to reduce the social and economic impacts of flooding.

4.131 Measures to help slow the flow of water which are likely to be appropriate to the topography and hydrology of the North East Worcestershire Strategic Corridor include:³²⁸

- creating “leaky” barriers (soil, wood or stone) across a flow path to intercept overland flow and create water storage which will drain slowly;
- incorporating scrapes, swales, wetlands and other sustainable drainage features into the topography of the site to manage local flow pathways by catching and storing run-off and sediments and slowing the water before it reaches the main river;
- managing soil and vegetation to reduce compaction and lower the water table through increased vegetation and root penetration or through measures to reduce erosion, compaction and hydrophobicity, so that the water storage capacity of the soil is increased and surface run-off is reduced;
- damming gullies or field drains to form pools;
- securely installing woody debris to hold water back in the upper reaches of the catchment, attenuating flood risk downstream;

³²⁷ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

³²⁸ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.



Exposed face of solid sand deposits at Pinches Quarry (courtesy of Herefordshire and Worcestershire Earth Heritage Trust)

- removing culverts and naturalising channels and watercourses to make more space for water; or
- incorporating two-stage channels on smaller watercourses where water levels can vary drastically between low flows and peak flows to increase velocity and depth during low flows whilst increasing in-channel capacity and reducing velocity during peak flows.

4.132 Consideration should be given to slowing the flow of water throughout all phases of the site's life, and this is expected to be integral to the design and layout of the site and any restoration proposals.

Create accessible semi-natural green space, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area

4.133 Creating accessible semi-natural green space will increase opportunities for informal access and recreation, contributing to the health and well-being of local communities. It also offers opportunities to help people to interpret features and characteristics in the landscape and understand how they interact. This can help to strengthen sense of place through increased understanding of the geodiversity, heritage and character of the area, and could help to enhance the beneficial use of the Green Belt.

4.134 In some cases, spaces or routes adjacent to or with views of particular features may be sufficient to increase legibility and understanding of the

feature. In other cases, signage or information boards may be appropriate. To be in keeping with the landscape character of the North East Worcestershire Strategic Corridor, accessible semi-natural green spaces or informal recreation sites should integrate characteristic hedgerow, tree cover and field patterns. The topography and landform of the site should be considered in order to create an enjoyable and distinctive visitor experience, taking account of the long-term management requirements of the site.

4.135 There is an identified need for a strategic or sub-regional scale recreation asset of at least 100ha in the vicinity of the North East Worcestershire Strategic Corridor.³²⁹ The inclusion of accessible semi-natural green space at a number of mineral developments could help to facilitate the provision of a strategic or sub-regional scale asset, or there may be opportunities for it to be provided by a single large site.

4.136 Consideration should be given to the phasing of working and restoration in order to allow safe access to semi-natural green space to be delivered as early as possible in the site's life, and proposals should give full consideration to whether the site could contribute to the creation of a strategic or sub-regional scale recreation asset. Any associated built development, such as to provide visitor facilities, is likely to require separate planning permission from the relevant Local Planning Authority.

³²⁹ Sites of over 100ha are classified as strategic or county level recreational sites, and sites of over 500ha are classified as sub-regional scale recreational sites. See Worcestershire Green Infrastructure Partnership's *Green Infrastructure Strategy 2013 – 2018* and *Green Infrastructure Framework Document 3*, available at www.worcestershire.gov.uk/GI.



Sandstone Estatelands landscape type (Lower Habberley, Worcestershire)

North West Worcestershire Strategic Corridor

Characteristics of the corridor

4.137 The North West Worcestershire Strategic Corridor is identified in the Key Diagram (Figure 4.1) and shown in detail in Figure 4.5. North West Worcestershire Strategic Corridor. It covers 5,390 hectares of land, and broadly covers the area around Stourport-on-Severn and Kidderminster up to the county boundary near Kinver and Stourbridge.

4.138 The landscape character of the North West Worcestershire Strategic Corridor is made up of the open, rolling landscapes of the Sandstone Estatelands landscape type (characterised by an ordered pattern of large, arable fields, straight roads and estate plantations), and the secluded pastoral landscapes of the Riverside Meadows landscape type (characterised by meandering, tree-lined rivers, flanked by alluvial meadows which are defined by hedge and ditch boundaries).³³⁰

4.139 Although agricultural land quality in this corridor is relatively low, with only 11.4% of the corridor being best and most versatile agricultural land,³³¹

arable land uses dominate the Sandstone Estatelands, with some woodland plantations, and grazing dominates the waterside meadows of the Riverside Meadows.

4.140 There is a high level of flood risk, with the corridor being affected by fluvial flooding from the River Severn and River Stour, as well as surface water and ground water flooding. The corridor predominantly covers lower parts of the river catchments it intersects with, particularly along the River Severn and the Hoo Brook, but also covers upper parts of the Stour and Blakedown Brook catchments. Flood betterment opportunities will include control and attenuation of run-off in the upper parts of a catchment and flood storage and floodplain connectivity in the lower parts of a catchment. The majority of the watercourses in the corridor are not currently meeting Water Framework Directive targets for “good ecological status”.³³² There are multiple Source Protection Zones designated within the corridor.

³³⁰ See Worcestershire's *Landscape Character Assessment* maps and guidance at www.worcestershire.gov.uk/lca.

³³¹ Based on Grade 1 and Grade 2 Agricultural Land, as the Provisional Agricultural Land Classification (1988) mapping does not distinguish between grade 3a and 3b land, and subsequent Post 1988 mapping is not comprehensive.

³³² Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.



Riverside Meadows landscape type

4.141 The North West Worcestershire Strategic Corridor has significant potential to deliver biodiversity action plan targets for both species and habitats, with the Wyre Forest Acid Heaths Biodiversity Delivery Area³³³ covering the centre of the corridor. Much of the corridor consists of the “forest sandstones” ecological zone where mineral working has the potential for the creation of scarce habitats of high conservation value including heathland, acid grassland and scrub, or rare mire and bog communities in damper areas. Some areas to the north and south of Kidderminster consist of the “river terraces” ecological zone where mineral working has the potential to rejuvenate the diversity of habitats and reintroduce wetlands to a largely drained and dry landscape. Where the “alluvial fenlands” ecological zone follows the watercourses through the corridor, mineral working could provide the conditions to enable natural succession to a diversity of rich wetland habitats including fen, wet grassland and wet woodland.³³⁴

4.142 The North West Worcestershire Strategic Corridor has areas of Palaeolithic potential throughout, with concentrations along the River Stour, and evidence for Mesolithic settlement and activity in the vicinity of the River Severn. There is evidence for later prehistoric settlement on hilltops and promontories and on lower gravel terraces of the Severn Valley. The historic settlement pattern is dominated by dispersed, wayside hamlets and farmsteads of medieval and post-medieval origin. Historic Landscape Character is broadly contrasting between landscapes of small, irregular field patterns derived from medieval and post-medieval piecemeal enclosure, and landscapes with larger, more regular-shaped field patterns that are 18th and 19th century in origin, and represent reorganised land use and enclosure from large areas of former heathland.

³³³ Information about the Worcestershire Biodiversity Action Plans and Biodiversity Delivery Areas is available at <http://www.worcestershire.gov.uk/biodiversity>.

³³⁴ Worcestershire County Council, *Biodiversity and mineral sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*, available at www.worcestershire.gov.uk/mineralsbackground.

4.143 There are several designated sites for geodiversity interest in the corridor. Although river terrace deposits are relatively limited in the North West Worcestershire Strategic Corridor, any mineral working within them has the potential to reveal and record evidence of the events surrounding establishment of the present course of the River Severn in glacial times. The southern and western parts of the corridor are within the Abberley and Malvern Hills Geopark,³³⁵ and the Geopark Way crosses the corridor between Kidderminster and Stourport-on-Severn. The Severn Way and the North Worcestershire Path long-distance routes also cross the corridor. There are also a number of shorter recreation routes in the corridor, but the network of public rights of way is relatively sparse in the north-east of the corridor. 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 six existing sub-regional scale accessible semi-natural green spaces in Wyre Forest District.³³⁶

4.144 Mineral development in the North West Worcestershire Strategic Corridor would be well located to serve planned growth in Stourport-on-Severn and Kidderminster,³³⁷ as well as Hagley,³³⁸ Kinver³³⁹ and the West Midlands Conurbation. There are good links to the strategic highway network throughout the corridor. The River Severn is navigable up to Stourport-on-Severn, and the Staffordshire and Worcestershire Canal runs through the corridor. One railway line runs through the corridor, although opportunities to connect to it may be limited.

4.145 The majority of the North West Worcestershire Strategic Corridor is within the Green Belt. Mineral development is not inappropriate within the Green Belt, provided it takes

place in a way which preserves its openness and does not conflict with the purposes of including land within the Green Belt.³⁴⁰ Minerals development also has the potential to enhance the beneficial use of the Green Belt³⁴¹ through providing enhanced public access and recreation opportunities, enhancing landscapes, visual amenity and biodiversity, and improving damaged and derelict land.

4.146 The North West Worcestershire Strategic Corridor contains 3.5%³⁴² of the county's terrace and glacial sand and gravel resources, 63.1%³⁴³ of the county's solid sand resources (including 38.8%³⁴⁴ of the Wildmoor Sandstone Formation which may contain silica sand resources) and four³⁴⁵ historic building stone sites. Sand and gravel has been worked³⁴⁶ in the North West Worcestershire Strategic Corridor in the past, largely for the terrace and glacial resources rather than solid sands. However, due to the extensive nature of the deposits, working in this corridor is most likely to be for the relatively deep solid sands, which average 111.8 metres in depth in this corridor. Although in some cases it may be possible to work these resources to a significant depth and to restore land to previous levels through the importation of materials, it is unlikely that it will be possible to work these resources to their full depth. The depth of working is likely to be limited by a combination of the availability of suitable materials in the area, the regulatory regime relating to landfilling, the need to ensure that worked land is reclaimed at the earliest opportunity and the need to provide high-quality restoration.³⁴⁷ It is therefore likely that sites in this corridor may not be worked to a significant depth, or that sites will need to be sensitively designed so that they are worked and restored to include some areas of lower land rather than restoring the whole site to previous levels.

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

336 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.

337 As proposed in the *Wyre Forest Core Strategy 2006-26*.

338 As proposed in the *Bromsgrove District Plan 2011-2030*.

339 As proposed in the *South Staffordshire Council Core Strategy (Local Plan) Development Plan Document* (adopted December 2012).

340 See policy MLP 18 (Green Belt) and Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, section 13.

341 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 141 states that "Once Green Belts have been defined, local planning authorities should plan positively to enhance their beneficial use, such as looking for opportunities to provide access; to provide opportunities for outdoor sport and recreation; to retain and enhance landscapes, visual amenity and biodiversity; or to improve damaged and derelict land".

342 By area, based on the key and significant resources identified in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018).

343 By area, based on the key and significant resources identified in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018).

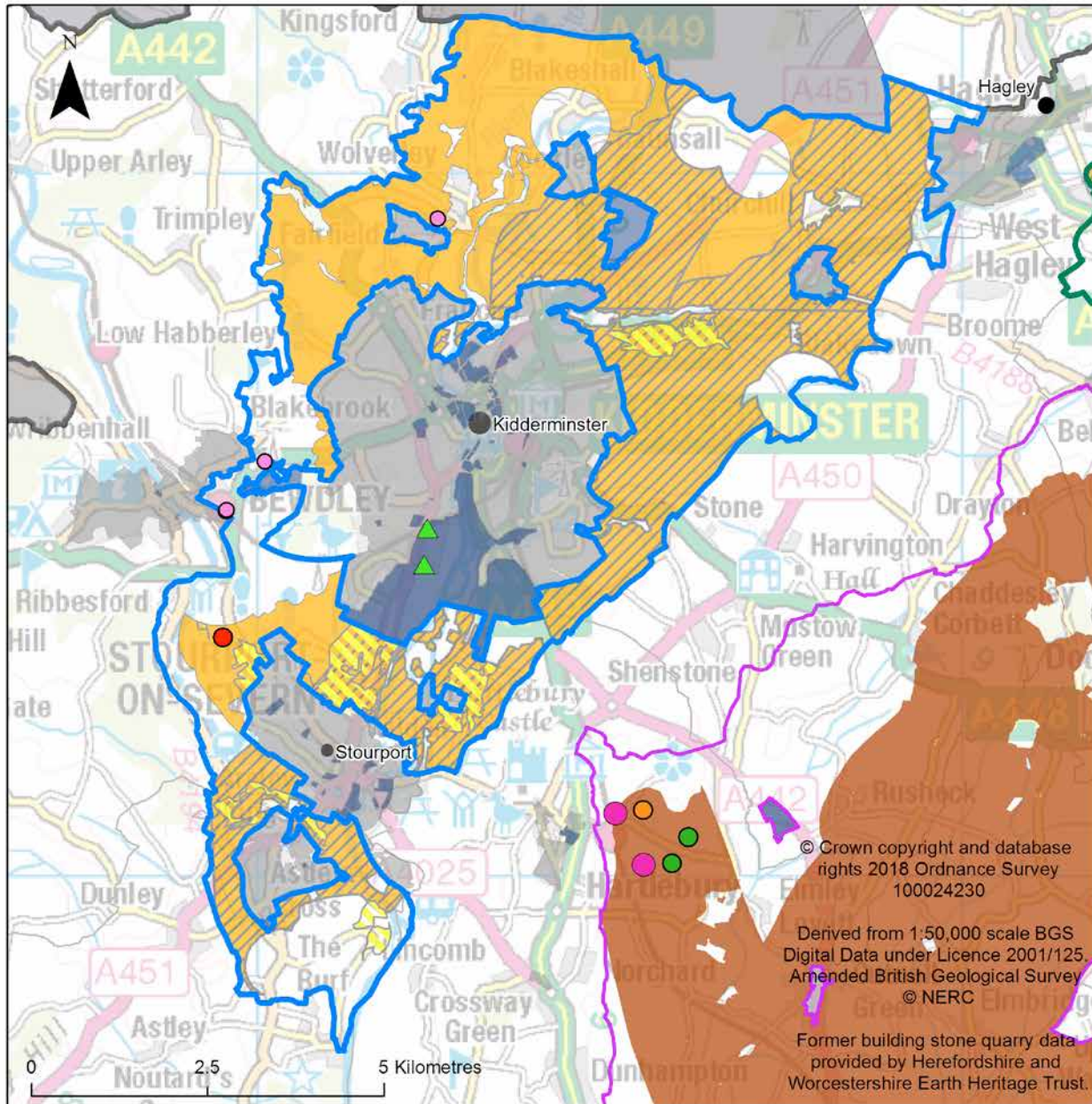
344 By area, based on the Wildmoor Sandstone Formation resource after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

345 Based on the remaining historic building stone sites identified by Herefordshire and Worcestershire Earth Heritage Trust's project "A Thousand Years of Building with Stone" (<http://www.buildingstones.org.uk/>) after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

346 Sand and gravel has previously been worked at Astley Burf Quarry, Lick Hill Quarry, Brant Farm Quarry, Blackstone Quarry and Wolverley Quarry. Moulding sand has also been worked at Stourhill Quarry. These can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

347 See policy MLP 17 (Prudent Use of Resources).

Figure 4.5. North West Worcestershire Strategic Corridor



Legend

<p>City, Borough and District site allocations</p> <p>Strategic corridors</p> <ul style="list-style-type: none"> North East Worcestershire Strategic Corridor North West Worcestershire Strategic Corridor Salwarpe Tributaries Strategic Corridor <p>Supporting Infrastructure</p>	<p>Plant type</p> <ul style="list-style-type: none"> Asphalt Brickworks Concrete Wharfage 	<p>Areas of search</p> <ul style="list-style-type: none"> Terrace and glacial sand and gravel Silica sand Solid sand sand and gravel Brick clay Building stone Settlements 	<p>Permitted Minerals Sites</p> <p>Status</p> <ul style="list-style-type: none"> Active Undergoing restoration Restored - in aftercare
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NOTE: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan. Supporting Infrastructure can be viewed in more detail in the supporting data section of the interactive minerals mapping tool.

Policy MLP 7: North West Worcestershire Strategic Corridor

Contributing to:

Objectives MO2, MO3, MO4, MO5

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 green infrastructure networks.

A level of technical assessment appropriate to the proposed development will be required to demonstrate how, throughout its lifetime, the development will optimise opportunities to deliver the following green infrastructure priorities for the North West Worcestershire Strategic Corridor:

- a) conserve, enhance and restore characteristic hedgerow patterns and tree cover along watercourses and streamlines;
- b) slow the flow of water in upper reaches and increase flood storage and floodplain connectivity in lower parts of the catchment;
- c) create accessible semi-natural green space, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area;
- d) in the Riverside Meadows, conserve and restore permanent pasture, incorporating wetland habitats such as fen and marsh, wet grassland, reedbed and lowland meadows alongside pastoral land use;
- e) in the Sandstone Estatelands, conserve, enhance and create lowland heathland, acid grassland and scrub.

Where significant deviation from these priorities is proposed, this will only be considered appropriate where robust justification is provided to demonstrate that the proposal will deliver specific local economic, social and/or environmental benefits, either through or alongside appropriate multifunctional green infrastructure measures, which demonstrably outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.147 Policy MLP 7 sets the priorities for the delivery of multifunctional green infrastructure in the North West Worcestershire Strategic Corridor. Each of the priorities for the corridor will contribute to multiple green infrastructure components, as well as climate change adaptation and mitigation.

4.148 The corridor priorities can be integrated and delivered alongside each other, and in most cases it will be appropriate to incorporate some elements of each priority. However, in some cases it may not be possible or desirable to deliver all priorities on a single site when the size of the site or other local factors are taken into account, and deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.149 The technical assessment required by policy MLP 7 will be expected to set out the considerations which have led to the proposed design of the site and the working, restoration and aftercare schemes, taking account of issues and opportunities identified through the consideration of policy MLP 3 (Green Infrastructure) and policies MLP 17 to MLP 30 (Development Management). The assessment should clearly specify how the proposed development will contribute to the green infrastructure priorities at each stage of the site's life, and why the proposed balance of priorities is considered to optimise the opportunities for delivering the priorities in that location. Where there is strong evidence to demonstrate that 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.

Conserve, enhance and restore characteristic hedgerow patterns and tree cover along watercourses and streamlines

4.150 Tree cover along watercourses and streams, and the restoration of characteristic hedgerow patterns³⁴⁸ will contribute to the structure and character of the landscape, the local distinctiveness of the area and the legibility of historic enclosure patterns in the landscape, and could enhance the setting of heritage assets. Incorporating trees along watercourses can also help to slow overland flows, increase infiltration and interception of rain and slow the velocity of water entering rivers. Trees and hedgerows can link and enhance habitats to provide an ecological network of connected habitats contributing to species resilience.

4.151 Each of the component landscape types in the North West Worcestershire Strategic Corridor has its own characteristic hedgerow and tree cover patterns, and development proposals will be expected to respect these:

- In the Sandstone Estatelands landscape type, there is an ordered pattern of large, arable fields, straight roads and estate plantations. Fields are typically defined by straight thorn hedges. There is a planned woodland character, with discrete blocks of estate plantations and groups of trees, as well as trees along watercourses. Tree cover in this landscape type provides a framework to views rather than producing a sense of enclosure and blocking them. Parkland features and associated ornamental planting can also contribute to the diversity of these landscapes. The conservation, enhancement and restoration of primary hedgerows and the development of a cohesive woodland structure, with woodland shape reflecting the pronounced regular landscape pattern, would considerably help to retain a sense of unity and scale to this landscape type. The principal component species in this landscape are English elm, hawthorn, blackthorn and damson, with holly also found locally.

- In the Riverside Meadows landscape type, the large- to medium-sized fields are defined by ditch and hedge boundaries, and linear tree belts along ditches, watercourses and in hedgerows are key characteristics of this landscape type, rather than woodland. The conservation and enhancement of hedgelines and tree cover along watercourses should contribute to the secluded pastoral landscape. Returning land to pasture rather than arable uses could help to minimise fragmentation of hedgerow structure by restoring their functionality. Typical species in this landscape type are alder and willow.

4.152 Tree cover and hedgerows should be conserved, enhanced and restored across all phases of the site's life, and consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

Slow the flow of water in upper reaches and increase flood storage and floodplain connectivity in lower parts of the catchment

4.153 The control and attenuation of run-off in the upper parts of the catchment, and flood storage and floodplain connectivity in the lower parts of the catchment will have the potential to reduce flood risk by increasing storage volumes and encouraging overland flows in areas located away from the source, as well as slowing flows, reducing peak levels, and increasing the time lag between rainfall and peak flows in areas closest to the source.³⁴⁹ This will also have the potential to improve water quality and riverine habitats, provide the conditions to enable natural succession to a diversity of rich wetland habitats including fen, wet grassland, wet woodland or rare mire and bog communities, and could help to reduce the economic and social impacts of flooding.

³⁴⁸ The primary hedgerow network consists of the hedgerows along roads, farm and parish boundaries, and the secondary hedgerow network is provided by the internal field boundaries.

³⁴⁹ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

- 4.154 Measures to help slow the flow of water or increase flood storage and floodplain connectivity which are likely to be appropriate to the topography and hydrology of the North West Worcestershire Strategic Corridor include:³⁵⁰
- using appropriate planting such as hedgerows, trees along watercourses, or woodland to slow overland flows, increase infiltration and interception of rain, and slow the velocity of water entering rivers;
 - securely installing woody debris to assist the transfer of water from the river to the floodplain to increase floodplain storage volumes, slow down flows within the channel, or hold water back in the upper reaches of the catchment, attenuating flood risk downstream;
 - diverting water from the river network to create temporary storage in ponds, washlands or reconnected floodplain, with a controlled outflow to attenuate flood risk downstream;
 - incorporating two-stage channels on smaller watercourses where water levels can vary drastically between low flows and peak flows to increase velocity and depth during low flows whilst increasing in-channel capacity and reducing velocity during peak flows;
 - incorporating features to manage local flow pathways by catching and storing run-off and sediments.
- 4.155 In some cases, a stand-off zone may 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 could 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.
- 4.156 Consideration should be given to slowing the flow of water or increasing flood storage and floodplain connectivity, depending on the location of the site within the catchment, throughout all phases of the site's life. Consideration of these issues is expected to be integral to the design and layout of the site and any restoration proposals.

Create accessible semi-natural green space, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area

- 4.157 Creating accessible semi-natural green space will increase opportunities for informal access and recreation, contributing to the health and well-being of local communities. It also offers opportunities to help people to interpret features and characteristics in the landscape and understand how they interact. This can help to strengthen sense of place through increased understanding of the geodiversity, heritage and character of the area, and could help to enhance the beneficial use of the Green Belt.
- 4.158 In some cases, spaces or routes adjacent to or with views of particular features may be sufficient to increase legibility and understanding of the feature. In other cases, signage or information boards may be appropriate. The southern and western parts of the North West Worcestershire Strategic Corridor are within the Abberley and Malvern Hills Geopark,³⁵¹ and 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 both the accessible semi-natural green space created and the wider Geopark.
- 4.159 To be in keeping with the landscape character of the North West Worcestershire Strategic Corridor, accessible semi-natural green spaces or informal recreation sites should integrate characteristic hedgerow, tree cover and field patterns, and should incorporate heathland and/or wetland features. The topography and landform of the site should be considered in order to create an enjoyable and distinctive visitor experience, taking account of the long-term management requirements of the site.

³⁵⁰ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

³⁵¹ More information about the Abberley and Malvern Hills Geopark is available at <http://geopark.org.uk/>

- 4.160 There is an identified need for a strategic or sub-regional scale recreation asset of at least 100ha in the vicinity of the North West Worcestershire Strategic Corridor.³⁵² The inclusion of accessible semi-natural green space at a number of mineral developments could help to facilitate the provision of a strategic or sub-regional scale asset, or there may be opportunities for it to be provided by a single large site.
- 4.161 Consideration should be given to the phasing of working and restoration in order to allow safe access to semi-natural green space to be delivered as early as possible in the site's life, and proposals should give full consideration to whether the site could contribute to the creation of a strategic or sub-regional scale recreation asset. Any associated built development, such as to provide visitor facilities, is likely to require separate planning permission from the relevant Local Planning Authority.

In the Riverside Meadows, conserve and restore permanent pasture, incorporating wetland features such as fen and marsh, wet grassland, reedbed and lowland meadows alongside pastoral land use

- 4.162 Permanent pasture is an important characteristic of the Riverside Meadows landscape type, but it is under pressure from increasing arable land uses. Conserving and restoring areas of permanent pasture in this landscape type will not only contribute to maintaining and enhancing landscape character and sense of place, but will protect these habitats to provide an ecological network of connected habitats contributing to species resilience, and could also protect and enhance the setting of heritage assets. Returning land to pasture rather than arable uses could help to minimise any further fragmentation of hedgerow structure by restoring their functionality.
- 4.163 Incorporating wetland features will aid natural flood management, flood storage and floodplain connectivity, as well as improving water quality. Floodplain and riverside vegetation can help to slow overland flows, increase infiltration and interception of rain and slow the velocity

of water entering rivers, with the potential to reduce flood risk by increasing storage volumes and encouraging overland flows in less vulnerable floodplain areas. It can deliver biodiversity gains and Biodiversity Action Plan priorities, and will contribute to climate change resilience. It can also enhance the local landscape character and in some cases reflect historic land uses and land management techniques. The creation of wetland habitats on individual sites will largely be dependent on the local hydrology and any seasonal changes.

- 4.164 Wet pastures and meadows would contribute positively to the character of the Riverside Meadows landscape type and proposals should incorporate wide, wet field margins with reedbed, fen, marsh, ponds, pools and scrapes which would provide valuable habitats and natural water storage, rather than open water. However, if open waterbodies are proposed, they should be designed to have serpentine and sinuous edges with significant shallow areas as broad drawdown zones will encourage marginal habitats including fen, marsh and reedbed to establish. The design of wetland habitats should consider the landscape character, retaining the local scale and pattern of enclosure, and opportunities to enhance the landscape and biodiversity benefits of the ditches and watercourses. Permanent pasture in the North West Worcestershire Strategic corridor may also offer opportunities to deliver acid grassland habitats where there are areas of appropriate soils and geology.
- 4.165 Wetland features should 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 features and habitats. *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*³⁵³ provides useful information about the types of habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory³⁵⁴ should be referred to when considering the opportunities to link and extend existing habitats.

352 Sites of over 100ha are classified as strategic or county level recreational sites, and sites of over 500ha are classified as sub-regional scale recreational sites. See Worcestershire Green Infrastructure Partnership's *Green Infrastructure Strategy 2013 – 2018* and *Green Infrastructure Framework Document 3*, available at www.worcestershire.gov.uk/GI.

353 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.

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

- 4.166 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 pasture and wetland habitats will be welcomed.
- 4.167 The conservation and restoration of permanent pasture, and the incorporation of wetland features, should take place across all phases of the site's life, and consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

In the Sandstone Estatelands, conserve, enhance and create lowland heathland, acid grassland and scrub

- 4.168 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 fragmented. Conserving, enhancing and restoring lowland heathland, acid grassland and scrub will not only contribute to protecting and expanding these habitats to provide an ecological network of connected habitats contributing to species resilience, but will also help to maintain and enhance landscape character and sense of place, and could protect and enhance the setting of heritage assets.
- 4.169 Conserving, enhancing and creating these high-value Biodiversity Action Plan priority habitats is particularly important where it would contribute to the wider network by extending existing heathland and acid grassland habitats or providing habitat corridors or stepping stones. Exposed sandy soils at mineral sites provide ideal conditions for lowland heathland, scrub and acid grassland habitats, or rare mire and bog communities in damper areas. Heathland and scrub can develop naturally on bunds and mounds and other areas of exposed sandy soils during working phases, giving opportunities to deliver biodiversity benefits throughout

the life of the site. Larger areas of heathland, scrub and acid grassland should respect locally characteristic field patterns, and where the restoration of the site is to arable land uses, low-nutrient soils should be retained to create heathland and acid grassland habitats in marginal areas such as along field boundaries, conservation headlands or set-aside areas.



Acid grassland habitat

- 4.170 *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*³⁵⁵ provides useful information about the types of habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory³⁵⁶ should be referred to when considering the opportunities to link and extend existing habitats.
- 4.171 The conservation, enhancement and creation of lowland heathland, scrub and acid grassland habitats should take place across all phases of the site's life, and consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

³⁵⁵ 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.

³⁵⁶ See *Worcestershire Habitat Inventory* information at http://www.worcestershire.gov.uk/info/20014/planning/1029/worcestershire_habitat_inventory.



Principal Timbered Farlands landscape type (Bredicot)

Salwarpe Tributaries Strategic Corridor

Characteristics of the corridor

4.172 The Salwarpe Tributaries Strategic Corridor is identified in the Key Diagram (Figure 4.1) and shown in detail in Figure 4.6. Salwarpe Tributaries Strategic Corridor. It covers 12,310 hectares of land, and broadly covers the area between Bromsgrove, Hanbury, Droitwich Spa, Hartlebury and Belbroughton.

4.173 The landscape character of the Salwarpe Tributaries Strategic Corridor is made up of the rolling lowland Principal Timbered Farlands landscape type, which has occasional steep sided hills and low escarpments and a small-scale, wooded, agricultural appearance. It is characterised by filtered views through densely scattered hedgerow trees, and has a mosaic of irregularly shaped woodlands, agricultural land cleared directly from woodland on a piecemeal basis, and land enclosed from former localised areas of open fields.³⁵⁷

4.174 Traditionally a landscape of mixed farming, with 18.6% of the corridor classified as best and most versatile agricultural land, a gradual increase in arable land uses is evident locally, but this is

leading to the demise of the hedgerow structure which is critical to the character of the landscape.

4.175 There is a relatively even spread of flood risk across the corridor, with 39% of its total area inside catchments with a low risk of flooding, 33% inside high risk and 28% inside medium risk catchments.³⁵⁸ The corridor is mainly affected by fluvial flooding from the river Salwarpe and Spadesbourne Brook. However, surface water flooding has historically affected multiple locations within the corridor, including Bournheath, Bromsgrove, Catshill and Stoke Prior, and some ground water flooding has affected Stourport-on-Severn, Bromsgrove and Stoke Prior. The corridor covers both upper and lower parts of the catchments, with a varied terrain which exhibits different hydrological characteristics, meaning that flood betterment opportunities will include control and attenuation of run-off in the upper parts of a catchment and flood storage and floodplain connectivity in the lower parts of a catchment. The majority of the watercourses in the corridor are not currently meeting Water Framework Directive targets for “good ecological status”.³⁵⁹

³⁵⁷ See Worcestershire's *Landscape Character Assessment* maps and guidance at www.worcestershire.gov.uk/lca.

³⁵⁸ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

³⁵⁹ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.



4.176 The Salwarpe Tributaries Strategic Corridor has some potential to deliver biodiversity action plan targets for both species and habitats, with the Forest of Feckenham Biodiversity Delivery Area³⁶⁰ covering the south-eastern side of the corridor. Small parts of the corridor consist of the “alluvial fenlands” ecological zone along the River Salwarpe, Elmbridge Brook and Hadley Brook in the south of the corridor, where mineral working could provide the conditions to enable natural succession to a diversity of rich wetland habitats including fen, wet grassland and wet woodland. There is also potential for the creation of scarce habitats of high conservation value including heathland, acid grassland and scrub, or rare mire and bog communities in damper areas, where the “forest sandstones” ecological zone occurs around the western fringes of the corridor.³⁶¹

4.177 Along the River Salwarpe, archaeological potential is typified by intensive occupation and land use from the prehistoric periods through to the post-medieval period. Areas of Palaeolithic potential are associated with parts of the Elmley Brook and Salwarpe corridors. Historic Landscape Character reflects a dispersed early medieval settlement pattern, possibly founded on earlier Roman estates. The field pattern has been affected by reorganisation and amalgamation, but is, nonetheless, diverse and multi-period in origin, derived from mixed historic land use: medieval and later mixed farming and the piecemeal enclosure of former woodland and unenclosed lowland heath. To the south-east of the corridor, the Historic Landscape Character is a diverse mix of post-medieval piecemeal fields and regular planned enclosure of former medieval open-field cultivation.

³⁶⁰ Information about the Worcestershire Biodiversity Action Plans and Biodiversity Delivery Areas is available at <http://www.worcestershire.gov.uk/biodiversity>.

³⁶¹ Worcestershire County Council, *Biodiversity and mineral sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*, available at www.worcestershire.gov.uk/mineralsbackground.

- 4.178 There is a relatively dense network of Public Rights of Way within the Salwarpe Tributaries Strategic Corridor, although there are no long-distance recreation routes. 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 and to serve planned housing growth around Worcester and Droitwich Spa.³⁶²
- 4.179 There are very few sites designated for their geological interest within the Salwarpe Tributaries Strategic Corridor.
- 4.180 Mineral development in the Salwarpe Tributaries Strategic Corridor would be well located to serve planned growth in the Worcester area and Droitwich Spa,³⁶³ Bromsgrove,³⁶⁴ Redditch,³⁶⁵ Kidderminster and Stourport-on-Severn.³⁶⁶ There are good links to the strategic highway network throughout the corridor. The Worcester and Birmingham Canal runs through the eastern edge of the corridor, and the Droitwich Canal runs across the south of the corridor, connecting to the River Severn just to the south of the corridor and to the Worcester and Birmingham Canal at Hanbury. Two rail lines cross the corridor, although opportunities to connect to them may be limited.
- 4.181 The majority of the Salwarpe Tributaries Strategic Corridor is within the Green Belt. Mineral development is not inappropriate within the Green Belt, provided it takes place in a way which preserves its openness and does not conflict with the purposes of including land within the Green Belt.³⁶⁷ Minerals development also has the potential to enhance the beneficial use of the Green Belt³⁶⁸ through providing enhanced public access and recreation opportunities, enhancing landscapes, visual amenity and biodiversity, and improving damaged and derelict land.
- 4.182 The Salwarpe Tributaries Strategic Corridor contains 15.8%³⁶⁹ of the county's Mercia Mudstone clay resource and 0.9%³⁷⁰ of the county's terrace and glacial sand and gravel resources. Brick clay is currently worked at two sites³⁷¹ in the Salwarpe Tributaries Strategic Corridor. Five³⁷² historic building stone sites are located within the corridor, and the corridor contains 79.1%³⁷³ of the Droitwich Halite Member rock salt deposits in the county.
- 4.183 Working in this corridor is therefore most likely to be for brick clay from Mercia Mudstone. In some cases it may be possible to restore land to previous levels through the importation of materials, however this is likely to be limited by both the availability of suitable materials in the area, the current regulatory regime, the need to ensure that worked land is reclaimed at the earliest opportunity and the need to provide high-quality restoration.³⁷⁴ It is therefore likely that parts of a site might be restored to previous levels, but some areas of lower land may be necessary.
- 4.184 The nature of the mineral deposits and the good level of access to the strategic transport network may mean that relatively large sites with their own processing plant are viable in this corridor, although centralised processing plant sites which enable access to "satellite" sites to work smaller mineral deposits may also be viable and could provide an efficient use of land and economic benefits through reducing the investment required in plant at individual working sites.

362 The need for a strategic recreation asset is identified in the adopted *South Worcestershire Development Plan 2006-30* (<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 "Worcester/ Droitwich Park" (based on the canal ring). However the provision of strategic recreation assets is not necessarily limited to the canals.

363 As proposed in the *South Worcestershire Development Plan 2006-2030*.

364 As proposed in the *Bromsgrove District Plan 2011-2030*.

365 As proposed in the *Borough of Redditch Local Plan No.4 2011-2030*.

366 As proposed in the *Wyre Forest Core Strategy 2006-26*.

367 See policy MLP 18 (Green Belt) and Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, section 13.

368 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 141 states that "Once Green Belts have been defined, local planning authorities should plan positively to enhance their beneficial use, such as looking for opportunities to provide access; to provide opportunities for outdoor sport and recreation; to retain and enhance landscapes, visual amenity and biodiversity; or to improve damaged and derelict land".

369 By area, based on the Mercia Mudstone resource after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

370 By area, based on the key and significant resources identified in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018).

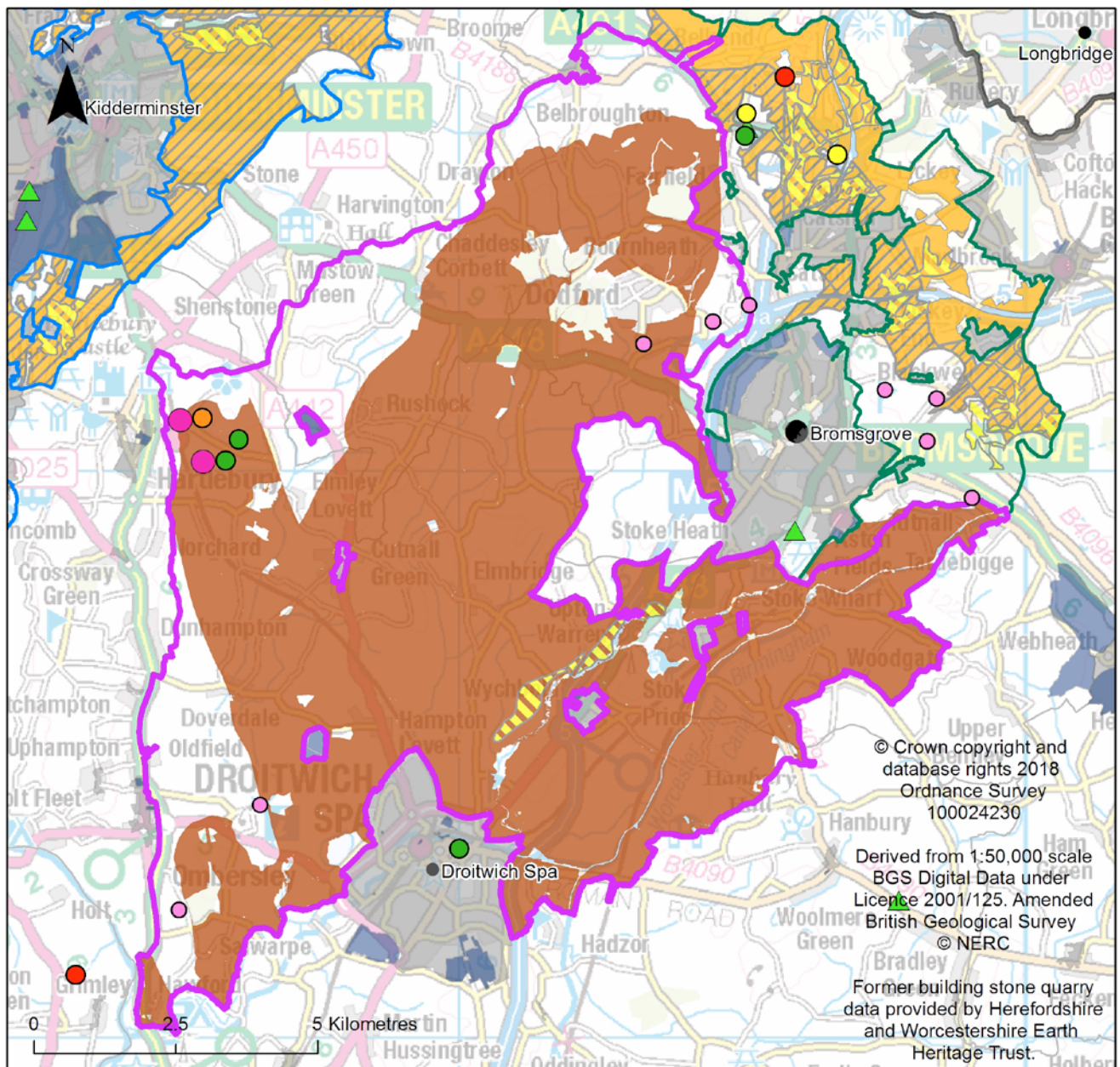
371 New House Farm Quarry and Waresley Quarry. These can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

372 Based on the remaining historic building stone sites identified by Herefordshire and Worcestershire Earth Heritage Trust's project "A Thousand Years of Building with Stone" (<http://www.buildingstones.org.uk/>) after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

373 Based on the remaining Droitwich Halite Member deposits after environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology*.

374 See policy MLP 17 (Prudent Use of Resources).

Figure 4.6. Salwarpe Tributaries Strategic Corridor



Legend

Settlements

Supporting Infrastructure

Plant type

- Brickworks
- ▲ Concrete
- City, Borough and District site allocations

Strategic corridors

- North East Worcestershire Strategic Corridor
- North West Worcestershire Strategic Corridor
- Salwarpe Tributaries Strategic Corridor

Areas of search

- Terrace and glacial sand and gravel
- Silica sand
- Solid sand sand and gravel

Brick clay

Building stone

Permitted Minerals Sites (Spring 2019)

Status

- Active
- Inactive
- Undergoing restoration
- Restored - in aftercare

NOTE: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan. Supporting Infrastructure can be viewed in more detail in the supporting data section of the interactive minerals mapping tool.

Policy MLP 8: Salwarpe Tributaries Strategic Corridor

Contributing to:

Objectives MO2, MO3, MO4, MO5

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 green infrastructure networks.

A level of technical assessment appropriate to the proposed development will be required to demonstrate how, throughout its lifetime, the development will optimise opportunities to deliver the following green infrastructure priorities for the Salwarpe Tributaries Strategic Corridor:

- a) conserve, enhance and restore characteristic hedgerow patterns and structure;
- b) protect, restore and link relic ancient woodlands and conserve and restore tree cover along watercourses and streamlines;
- c) slow the flow of water in upper reaches and increase flood storage and floodplain connectivity in lower parts of the catchment;
- d) create accessible semi-natural green space, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area.

Where significant deviation from these priorities is proposed, this will only be considered appropriate where robust justification is provided to demonstrate that the proposal will deliver specific local economic, social and/or environmental benefits, either through or alongside appropriate multifunctional green infrastructure measures, which demonstrably outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.185 Policy MLP 8 outlines the strategic framework for the delivery of multifunctional green infrastructure in the Salwarpe Tributaries Strategic Corridor. Each of the priorities for the corridor will contribute to multiple green infrastructure components, as well as climate change adaptation and mitigation.

4.186 The corridor priorities can be integrated and delivered alongside each other, and in most cases it will be appropriate to incorporate some elements of each priority. However, in some cases it may not be possible or desirable to deliver all priorities on a single site when the size of the site or other local factors are taken into account, and deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.187 The technical assessment required by policy MLP 8 will be expected set out the considerations which have led to the proposed design of the site and the working, restoration and aftercare schemes, taking account of issues and opportunities identified through the consideration of policy MLP 3 (Green Infrastructure) and policies MLP 17 to MLP 30 (Development Management). The assessment should clearly specify how the proposed development will contribute to the green infrastructure priorities at each stage of the site's life, and why the proposed balance of priorities is considered to optimise the opportunities for delivering the priorities in that location. Where there is strong evidence to demonstrate that 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.

Conserve, enhance and restore characteristic hedgerow patterns and structure

4.188 The pattern and structure of hedgerows is a key characteristic of the Principal Timbered Farmlands landscape type, providing the basic fabric for the hedgerow tree populations and emphasising scale and enclosure. Conserving, enhancing and restoring hedgerows to preserve the organic pattern of enclosure and rebalance the age distribution of hedgerow oaks will contribute to maintaining and enhancing landscape character and sense of place. It will also increase the legibility of historic enclosure patterns in the landscape, enhance the setting of heritage assets, and link and enhance habitats to provide an ecological network of connected habitats contributing to species resilience.

4.189 The hedgerow composition is complex and rich in places where the links to woodland origins are strongest, and the characteristic tree cover creates the filtered views that are distinctive in this landscape. Lines of mature oak are a particular feature of the hedgerows in the Principal Timbered Farmlands. However, the age distribution of hedgerow oak is unbalanced, with the majority classed as mature or veteran. Protecting, maintaining or planting younger hedgerow oaks could help address this imbalance, providing a succession of younger trees to help ensure this landscape feature is retained over time. Hedgerow fruit trees might also be appropriate in the Forest of Feckenham Biodiversity Delivery Area, with an emphasis on the fruit type and varieties associated with the specific locality of the proposal.

4.190 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 sub-dividing or enlarging fields or employing straight fences or hedgelines. Returning land to pasture rather than arable uses could help to minimise any further fragmentation of hedgerow structure by restoring their functionality, as well as potentially having greater benefits for water quality, flood betterment and biodiversity than arable land uses.

4.191 Hedgerows and their characteristic patterns and structure should be conserved, enhanced and restored across all phases of the site's life, and consideration of these features is expected to be integral to the design and layout of the site and any restoration proposals.

Protect, restore and link relic ancient woodlands and conserve and restore tree cover along watercourses and streamlines

4.192 The presence of tree cover in the form of woodlands and linear, streamside tree cover, as well as hedgerow trees, is a unifying feature of the Principal Timbered Farmlands. The combined presence of these tree cover components creates the underlying sense of scale and enclosure, together with the filtered views that are distinctive in this landscape. The resulting woodland character is essentially that of mixed native broadleaves, with oak the dominant species.

4.193 Protecting, restoring and linking relic ancient woodland in appropriate ways³⁷⁵ will not only contribute to maintaining and enhancing landscape character and sense of place, but will also increase the legibility of historic enclosure patterns in the landscape and link and enhance habitats to provide an ecological network of connected habitats contributing to species resilience. Incorporating woodland and trees along watercourses can also help to slow overland flows, increase infiltration and interception of rain and slow the velocity of water entering rivers.

4.194 The distribution of woodlands in the Salwarpe Tributaries Strategic Corridor is characteristically uneven, but the stream-side tree cover is fragmented in places. Woodlands vary in size from small field corner copses to those of a size exceeding that of the surrounding fields, and wet woodland is often associated with linear strips along smaller streams. The shape of new woodlands should reflect the overall irregular, organic structure of the Principal Timbered Farmlands. However, large-scale planting or linking up existing fragmented woodlands to form large blocks would not be appropriate.

³⁷⁵ Further guidance about the types of woodland habitats that might be appropriate and how these can be created and managed is available in 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) and 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.

4.195 Consideration should be given to protecting, restoring and linking woodland habitats and conserving and restoring tree cover along watercourses and streamlines throughout 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.

Slow the flow of water in upper reaches and increase flood storage and floodplain connectivity in lower parts of the catchment

4.196 The control and attenuation of run-off in the upper parts of the catchment, and flood storage and floodplain connectivity in the lower parts of the catchment will have the potential to reduce flood risk by increasing storage volumes and encouraging overland flows in areas located away from the source, as well as slowing flows, reducing peak levels, and increasing the time lag between rainfall and peak flows in areas closest to the source.³⁷⁶ This will also have the potential to improve water quality and riverine habitats, provide the conditions to enable natural succession to a diversity of rich wetland habitats including fen, wet grassland, wet woodland or rare mire and bog communities, and could help to reduce the economic and social impacts of flooding.

4.197 Measures to help slow the flow of water or increase flood storage and floodplain connectivity which are likely to be appropriate to the topography and hydrology of the Salwarpe Tributaries Strategic Corridor include:³⁷⁷

- creating “leaky” barriers (soil, wood or stone) across a flow path to intercept overland flow and create water storage which will drain slowly;
- incorporating scrapes, swales, wetlands and other sustainable drainage features into the topography of the site to manage local flow pathways by catching and storing run-off and sediments and slowing the water before it reaches the main river;
- damming gullies or field drains to form pools; or

- securely installing woody debris to assist the transfer of water from the river to the floodplain to increase floodplain storage volumes, slow down flows within the channel, or hold water back in the upper reaches of the catchment, attenuating flood risk downstream.

4.198 Consideration should be given to slowing the flow of water or increasing flood storage and floodplain connectivity, depending on the location of the site within the catchment, throughout all phases of the site's life. Consideration of these issues is expected to be integral to the design and layout of the site and any restoration proposals.

Create accessible semi-natural green space, incorporating information or routes which increase the legibility and understanding of the geodiversity, heritage and character of the area

4.199 Creating accessible semi-natural green space will increase opportunities for informal access and recreation, contributing to the health and well-being of local communities. It also offers opportunities to help people to interpret features and characteristics in the landscape and understand how they interact. This can help to strengthen sense of place through increased understanding of the geodiversity, heritage and character of the area, and could help to enhance the beneficial use of the Green Belt.

4.200 In some cases, spaces or routes adjacent to or with views of particular features may be sufficient to increase legibility and understanding of the feature. In other cases, signage or information boards may be appropriate. To be in keeping with the landscape character of the Salwarpe Tributaries Strategic Corridor, accessible semi-natural green spaces or informal recreation sites should integrate woodland and characteristic hedgerow, tree cover and field patterns. The topography and landform of the site should be considered in order to create an enjoyable and distinctive visitor experience, taking account of the long-term management requirements of the site.

376 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.
 377 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.



Principal Timbered Farmlands landscape type

4.201 There is an identified need for a strategic or sub-regional scale recreation asset of at least 100ha in the vicinity of the Salwarpe Tributaries Strategic Corridor.³⁷⁸ The inclusion of accessible semi-natural green space at a number of mineral developments could help to facilitate the provision of a strategic or sub-regional scale asset, or there may be opportunities for it to be provided by a single large site.

4.202 Consideration should be given to the phasing of working and restoration in order to allow safe access to semi-natural green space to be delivered as early as possible in the site's life, and proposals should give full consideration to whether the site could contribute to the creation of a strategic or sub-regional scale recreation asset. Any associated built development, such as to provide visitor facilities, is likely to require separate planning permission from the relevant Local Planning Authority.

³⁷⁸ Sites of over 100ha are classified as strategic or county level recreational sites, and sites of over 500ha are classified as sub-regional scale recreational sites. See Worcestershire Green Infrastructure Partnership's *Green Infrastructure Strategy 2013 – 2018* and Green Infrastructure Framework Document 3, available at www.worcestershire.gov.uk/GI.



Extracting sand and gravel at Ball Mill Quarry

5. Supply of mineral resources (strategic policies)

Introduction

5.1 Minerals provide the raw materials to support sustainable economic growth and quality of life. It is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs.³⁷⁹ 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.

5.2 Maintaining a 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 7.

5.3 The level of supply which is considered to be “adequate” varies for different types of minerals. The National Planning Policy Framework 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,³⁸⁰ and recognises that long-term investment needs influence the requirements for stocks of permitted reserves of industrial minerals.³⁸¹ 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.

5.4 The baseline Local Aggregate Assessment³⁸² (using data up to 31st December 2016) sets out the data underpinning the Minerals Local Plan with regard to aggregates, with additional information about aggregates, industrial and energy minerals provided in a suite of background documents³⁸³.

³⁷⁹ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 203.

³⁸⁰ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 207.

³⁸¹ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 208.

³⁸² Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

³⁸³ See background documents on *Crushed Rock in Worcestershire*, *Crushed Rock Supply in Worcestershire – Summary of action undertaken under the duty to cooperate*, *Sand and Gravel in Worcestershire*, *Building Stone in Worcestershire*, *Clay in Worcestershire*, *Salt and Brine in Worcestershire*, *Silica Sand in Worcestershire*, *Coal in Worcestershire*, and *Conventional and Unconventional hydrocarbons (Oil and Gas; excluding coal)*, at www.worcestershire.gov.uk/mineralsbackground, and the Worcestershire Minerals and Waste Development Framework Authority Monitoring Reports are available at www.worcestershire.gov.uk/amr.

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

Policy MLP 9: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply

Contributing to:

Objectives MO1, MO5, MO6

Planning permission will be granted for proposals that enable the supply of minerals from substitute, secondary or recycled materials or mineral waste where they accord with the policies of the Waste Core Strategy.

Where the proposed development involves the management, processing and/or stockpiling of substitute, secondary or recycled materials or mineral waste on an existing or proposed site for working and/or processing primary minerals, it must be clearly demonstrated that this would not have an adverse impact on working the site or on the ability to deliver high-quality restoration at the earliest opportunity.

Reasoned justification

- 5.5 Mineral resources are finite and it is important to make the best use of them. The use of substitute, secondary and recycled materials and minerals waste helps to reduce the need for primary minerals and can 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. The Waste Core Strategy for Worcestershire promotes the re-use and recycling of materials and contains policies regarding the development of recycling facilities. Policy MLP 9 should be read in conjunction with the Waste Core Strategy.
- 5.6 The use of substitute, secondary and recycled materials and mineral waste is becoming embedded as part of a sustainable minerals market, with more mineral operators seeking to offer a range of sustainable products for sale. Policy MLP 9 encourages and enables this, supporting development which would contribute to the overall sustainable supply of materials and thereby reducing the overall need for the extraction of primary minerals.
- 5.7 Where the proposed development is located on an existing or proposed site for working and/or processing primary minerals, proposals will be

expected to demonstrate how the proposal will ensure that the working and restoration of the site will not be negatively impacted. This should include consideration of practical requirements for working the site and the temporary nature of mineral workings, and ensuring that the ability to deliver high-quality restoration at the earliest opportunity will not be compromised. For sites with existing planning permission, this is likely to require such activities to be aligned to the timescales and restoration scheme of the existing permission.

Aggregate supply

- 5.8 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”,³⁸⁴ 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 Aggregate Assessment³⁸⁵.

³⁸⁴ Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals*, paragraph: 060 Reference ID: 27-060-20140306 Revision date: 06 03 2014.

³⁸⁵ Worcestershire's *Local Aggregate Assessments* are available at www.worcestershire.gov.uk/amr.

Sand and gravel supply

Policy MLP 10: Steady and Adequate Supply of Sand and Gravel

Contributing to:

Objectives MO1, MO5

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

A level of technical assessment appropriate to the proposed development will be required to demonstrate the contribution the proposed development will make towards:

- a) maintaining a landbank of permitted sand and gravel reserves in Worcestershire of at least 7 years; and/or
- b) enabling Worcestershire's productive capacity for sand and gravel supply to be maintained or enhanced.

Reasoned justification

5.9 At the end of 2016, there were six sand and gravel sites³⁸⁶ in Worcestershire:

- three sites were “active” (in production for some time during the year);
- two were “inactive” (worked in the past and contain permitted reserves)³⁸⁷; and
- one new site was “permitted – not commenced” (planning permission granted but development not yet commenced).

Maintaining permitted reserves of sand and gravel

5.10 Worcestershire's Local Aggregate Assessment considers the average level of sales of sand and gravel from Worcestershire³⁸⁸ alongside other relevant local information to set a “production guideline”. The baseline Local Aggregate Assessment³⁸⁹ identifies an annual production guideline of 0.607 million tonnes.³⁹⁰ As the Local Aggregate Assessment is produced annually, the annual production guideline will vary through the life of the plan and the plan has been developed to be sufficiently flexible to adapt to such changes.

5.11 The landbank for sand and gravel in Worcestershire at the end of 2016 stood at approximately 7 years,³⁹¹ meeting the requirement for a minimum of 7 years set out in national policy.³⁹² The Minerals Local Plan enables the provision of at least a further 11.53 million tonnes³⁹³ of sand and gravel over the life of the plan to maintain a landbank of at least 7 years to 2035 and beyond.

5.12 In order to enable the steady and adequate supply of sand and gravel, Policy MLP 10 supports minerals development which will contribute to 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 Aggregate Assessment annually. This is supported by the identification of areas of search in Chapter 4, and specific sites and preferred areas will be allocated in a separate Mineral Site Allocations Development Plan Document.

386 A Review of Mineral Permission submission was required for one of these sites, Sandy Lane Quarry, by 20th March 2017 but was not submitted. Planning permission for the reserves at this site has therefore expired and the site is undergoing restoration.

387 One of the sites classed its permitted reserves as being for “non-aggregate uses”.

388 The average level of sales of sand and gravel from Worcestershire over the 10 year period from 2007-2016 was 0.607 million tonnes per year. Data from 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 (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

389 Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

390 Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*. There was not enough evidence to suggest that the production guideline for sand and gravel should vary from the 10 year average.

391 The landbank stood at 6.99-7.07 years due to one site submitting their remaining reserve figure as a range.

392 At 31st December 2016, Worcestershire had 4.244-4.294 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 (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*.

393 Figure based on the production guideline of 0.607 million tonnes each year from 2017 to 2035, but the plan includes sufficient flexibility to adapt to changes in the production guideline.



Excavating sand and gravel at Ryall's Court Farm Quarry

- 5.13 Policy MLP 10 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should include sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource at the site, such as through details of boreholes and trial pits, highlighting the depth, type and distribution of the resource, and differentiating between different phases of the development, in order to clearly demonstrate the contribution the proposed development would make towards Worcestershire's landbank of permitted sand and gravel reserves.

Enabling productive capacity to be maintained or enhanced

- 5.14 In addition to maintaining a landbank 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 number of active sites and their combined capacity to extract, process and sell minerals.
- 5.15 Productive capacity at an individual site is not directly related to the size of its permitted reserves. The contribution a site can make to

the annual supply of materials (its productive capacity) can be directly limited by the maximum possible throughput of a site's processing plant, or indirectly through measures which seek to minimise 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.

- 5.16 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.
- 5.17 The technical assessment required by policy MLP 10 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.

Crushed rock supply

Policy MLP 11: Steady and Adequate Supply of Crushed Rock

Contributing to:

Objectives MO1, MO5

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

A level of technical assessment appropriate to the proposed development will be required to demonstrate the contribution the proposed development will make towards:

- a) increasing or maintaining the landbank of permitted crushed rock reserves in Worcestershire to achieve or maintain a landbank of at least 10 years;
- and/or
- b) enabling Worcestershire's productive capacity for crushed rock supply to be maintained or enhanced.

Reasoned justification

5.18 There has been no crushed rock working in Worcestershire since 2010 and, at the end of 2016, there were no active crushed rock sites and no landbank of permitted reserves for crushed rock in Worcestershire.³⁹⁴

5.19 Worcestershire's Local Aggregate Assessment considers the average level of sales of crushed rock from Worcestershire³⁹⁵ alongside other relevant local information to set a "production guideline". In the case of crushed rock, the baseline Local Aggregate Assessment³⁹⁶ identifies local information that indicates that this "production guideline" should be 0 tonnes per annum.³⁹⁷ The Local Aggregate 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 resources³⁹⁸ 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. However, the plan has been developed to be sufficiently flexible to adapt to any changes in the production guideline.

5.20 Policy MLP 11 requires any planning applications which do come forward to contain an appropriate level of technical assessment undertaken by an appropriate and competent expert. This should include sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource at the site, such as through details of boreholes and trial pits, highlighting the depth, type and distribution of the resource, differentiating between different phases of the development, in order to clearly demonstrate the contribution the proposed development would make towards Worcestershire's landbank of permitted crushed rock reserves and 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.

³⁹⁴ No sites for crushed rock working have been put forward in response to four calls for sites between 2014 and 2018 during the development of the Minerals Local Plan.

³⁹⁵ The average level of sales of crushed rock from Worcestershire over the 10 year period from 2007-2016 was 0.026 million tonnes per year. Worcestershire's data was combined with Herefordshire up to 2009 due to issues of commercial confidentiality, and in order to calculate the 10 year average of sales, an assumption was made that a third of the sales was attributable to Worcestershire. See Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

³⁹⁶ Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*, available at www.worcestershire.gov.uk/amr.

³⁹⁷ Worcestershire County Council (July 2018) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2016)*. There are significant constraints on delivering crushed rock production in Worcestershire (these are outlined in Chapter 2) and there has been very limited market interest in working crushed rock in Worcestershire for many years. In the baseline Local Aggregate Assessment these were considered to be strong indicators that the 10 year average (0.026 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.

³⁹⁸ See Chapter 2: Portrait of Worcestershire.

Industrial minerals supply

- 5.21 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 or bricks. National policy recognises that long-term investment needs influence landbank requirements for these minerals.

Supply of brick clay and clay products

Policy MLP 12: Steady and Adequate Supply of Brick Clay and Clay Products

Contributing to:

Objectives MO1, MO5

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

A level of technical assessment appropriate to the proposed development will be required to demonstrate the contribution the proposed development will make towards:

- a) maintaining a stock of permitted reserves at the individual clay site of at least 25 years to support investment in developing, maintaining or improving new or existing plant and equipment;
- b) providing clay which will enable appropriate blends to be made; and/or
- c) enabling Worcestershire's productive capacity for brick clay or clay products to be maintained or enhanced.

Reasoned justification

- 5.22 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 126,000 tonnes per annum.³⁹⁹ At the end of 2016 there were two clay sites in Worcestershire, each with associated brickworks. Each of these clay workings has a stock of permitted reserves sufficient for the life of the plan.⁴⁰⁰ However, further reserves may be required to support investment in developing,

maintaining or improving new or existing plant and equipment to ensure that Worcestershire continues to contribute to local and national supplies of brick clay and clay products, to enable appropriate blends of clays with different properties, or to maintain or enhance Worcestershire's productive capacity for brick clay or clay products. Policy MLP 12 therefore enables further brick clay development to come forward.

³⁹⁹ 10 year average based on *Mineral extraction in Great Britain, Business Monitor PA1007* reports for 2005 to 2014. Data for Worcestershire was only published for 2012, 2011, 2010, and 2006. The data for other years was withheld to avoid disclosure of information relating to an individual undertaking without the consent of the person carrying on that undertaking.

⁴⁰⁰ Based on the figure for the remaining stock of permitted reserves in December 2016 (as provided in confidential discussions with the operator of the clay sites in Worcestershire, Weinerberger, April 2017), the permitted reserves would last approximately 63 years based on the 10 year average of known annual sales, but based on the sites' maximum potential output this could be less than 25 years.

5.23 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.

5.24 In addition to maintaining stocks of permitted reserves, it is important to maintain sufficient productive capacity in the county. Worcestershire's overall productive capacity results from the number of active sites and their combined capacity to produce, process and sell minerals. Productive capacity at an individual site is not directly related to the size of its permitted reserves. The contribution a site can make to the annual supply of materials (its productive capacity) can be directly limited by the maximum throughput of the site's processing plant, or indirectly through measures which seek to minimise or mitigate environmental or amenity impacts, such as limiting opening hours or the number of vehicle movements.

5.25 Clay sites are often worked by extracting resources 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. Worcestershire's productive capacity for brick clay or clay products is likely to be maintained or enhanced through a combination of additional sites and more efficient plant, machinery and working practices at existing sites.



New House Farm Quarry (brick clay), near Hartlebury

5.26 Policy MLP 12 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should include sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource at the site, such as through details of boreholes and trial pits, highlighting the depth, type and distribution of the resource, differentiating between different phases of the development. This should demonstrate:

- how the proposed development would support actual or proposed investment in developing, maintaining or improving new or existing plant and equipment;
- how the proposed development would enable appropriate blends at works within or beyond Worcestershire; and/or
- the scale of the contribution the proposed development would make towards Worcestershire's productive capacity for brick clay or clay products. 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 13: Steady and Adequate Supply of Silica Sand

Contributing to:

Objectives MO1, MO5

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.

A level of technical assessment appropriate to the proposed development will be required to demonstrate the contribution the proposed development will make towards:

- a) maintaining a stock of permitted reserves at the individual silica sand site of at least 10 years, or at least 15 years at sites where significant new capital is required, to support investment in developing, maintaining or improving new or existing plant and equipment; and/or
- b) enabling Worcestershire's productive capacity for silica sand for industrial uses to be maintained or enhanced.

Reasoned justification

5.27 Worcestershire does not play a significant role in the supply of silica sand for industrial uses due to low levels of demand for the type of silica sand found in the county (naturally bonded moulding sand). Sales of silica sand from the county account for less than 1% of national supply of foundry sand,⁴⁰¹ and silica sand from Worcestershire is not used in glass manufacture or other industrial uses as different grades of silica sand are not usually interchangeable.

5.28 In 2016, silica sand was worked at one "active" site⁴⁰², with further permitted reserves in one "inactive" site⁴⁰³ 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.⁴⁰⁴

5.29 With 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. Worcestershire's productive capacity for silica sand for industrial uses is likely to be maintained or enhanced through a combination of additional sites, more efficient plant, machinery and working practices

at existing sites, and stockpiling of silica sand as it is encountered when worked alongside aggregate sand and gravel to enable the mineral to be available for sale for industrial purposes.

5.30 Policy MLP 13 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should include sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource at the site, such as through details of boreholes and trial pits, highlighting the depth, type and distribution of the resource, differentiating between different phases of the development. This should demonstrate:

- how the proposed development would support actual or proposed investment in developing, maintaining or improving new or existing plant and equipment; and/or
- the scale of the contribution the proposed development would make towards Worcestershire's productive capacity for silica sand. This may include details of proposed stockpiles, 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.

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

402 Wildmoor Quarry (formerly John Williams Cinetic Sand). "Active" sites are permitted minerals sites in production for some time during the year.

403 Sandy Lane Quarry (formerly Stanley N. Evans Ltd). "Inactive" sites are permitted minerals sites worked in the past and containing permitted reserves. A Review of Mineral Permission submission was required for this site by 20th March 2017 but was not submitted. Planning permission for the reserves at this site has therefore expired and the site is undergoing restoration.

404 Worcestershire County Council (September 2018) *Silica Sand in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.

Supply of building stone⁴⁰⁵

Policy MLP 14: Adequate and Diverse Supply of Building Stone

Contributing to:

Objectives MO1, MO3, MO5

Planning permission will be granted for minerals development that will contribute to achieving an adequate and diverse supply of building stone.

A level of technical assessment appropriate to the proposed development will be required to demonstrate the contribution the proposed development will make towards:

- 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

- 5.31 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.⁴⁰⁶
- 5.32 There are no active building stone sites in Worcestershire. 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 14 does not set supply targets or delivery milestones but enables 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 or national need for a specific material.
- 5.33 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 6 (Development Management).
- 5.34 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 as a whole due to the significant variations in the type and use of materials from individual sites. Worcestershire's productive capacity for building stone is likely to be maintained or enhanced through a combination of new sites and more efficient plant, machinery and working practices over the life of any sites which are developed. Stockpiling of building stone as it arises from ground works or the demolition of existing structures may also help to ensure the availability of building stone, but this may need to be considered against Policy MLP 9 or the Waste Core Strategy.

⁴⁰⁵ For the purpose of this document, the term 'building stone' incorporates building, walling, roofing and dimension stones.

⁴⁰⁶ Worcestershire County Council (September 2018) *Building Stone in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.

5.35 Policy MLP 14 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should include sufficiently detailed site investigations and analysis to demonstrate the quantity and quality of the resource at the site, such as through details of boreholes and trial pits, highlighting the depth, type and distribution of the resource, differentiating between different phases of the development, in order to clearly demonstrate the contribution the proposed

development would make towards Worcestershire's stock of permitted reserves of the particular type of building stone and 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.

Supply of other locally and nationally important industrial minerals

Policy MLP 15: Supply of Other Locally and Nationally Important Industrial Minerals

Contributing to:

Objectives MO1, MO5

Planning permission will be granted for minerals development that will contribute to the sustainable supply of other locally and nationally important industrial mineral resources.

A level of technical assessment appropriate to the proposed development will be required to demonstrate that the development would meet a local or national need.

Reasoned justification

5.36 Other mineral deposits exist within Worcestershire, such as Halite (salt) and clays which are not currently used for brickmaking in the county. The Minerals Local Plan does not set supply targets or delivery milestones for them, but Policy MLP 15 enables the sustainable supply of these or other types of industrial mineral to take place.

5.37 Policy MLP 15 requires an appropriate level of technical assessment to be submitted with each application. Such assessments 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 at the site, such as through details of boreholes and trial pits, highlighting the depth, type and distribution of the resource, differentiating between different phases of the development, in order to demonstrate that the resource would be capable of meeting the identified need.



Energy minerals supply

Policy MLP 16: Supply of Energy Minerals

Contributing to:

Objectives MO1, MO5

- 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. A level of technical assessment appropriate to the proposed development will be required to demonstrate that:
 - i. the proposed development will contribute to the sustainable supply of energy minerals; and
 - ii. the proposed development is either:
 - environmentally acceptable; or
 - will provide national, local or community benefits which clearly outweigh the likely impacts.
- 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. A level of technical assessment appropriate to the proposed development will be required to:
 - i. demonstrate that the proposed development will contribute to the sustainable supply of energy minerals; and
 - ii. clearly distinguish between exploration, appraisal and production phases.

Reasoned justification

5.38 There are no known locally or nationally important energy mineral resources within Worcestershire. As such, the Minerals Local Plan does not set supply targets or delivery milestones for them.

5.39 Coal deposits exist in Worcestershire, but these are not considered by the Coal Authority to be a commercially viable resource.⁴⁰⁷ 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.⁴⁰⁸

5.40 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.⁴⁰⁹

⁴⁰⁷ Worcestershire County Council (September 2018) *Coal mining in Worcestershire*, available at www.worcestershire.gov.uk/mineralsbackground.

⁴⁰⁸ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 211.

⁴⁰⁹ Information about the Onshore Oil and Gas Licensing Rounds is available at <https://www.ogauthority.co.uk/licensing-consents>.



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

- 5.41 Policy MLP 16 does not seek to enable coal extraction and would only enable onshore oil and gas development should resources be discovered in the county and licensed under future Onshore Oil and Gas Licensing Rounds. However, should any planning applications be put forward, Policy MLP 16 requires a technical assessment to be submitted with the application. Such assessments should be undertaken by an appropriate and competent expert and 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.
- 5.42 For proposals for coal, the technical assessment should clearly set out the reasons the proposed development is considered to be environmentally acceptable, or provide details of the national, local or community benefits which are considered to outweigh the impacts of the development and how these benefits will be secured as part of the development.
- 5.43 For proposals for oil and gas, the technical assessment should distinguish between exploration, appraisal and production phases when setting out the processes proposed and their likely effects.



Planning committee site visit to Clifton Quarry

6. Development management (non-strategic policies)

Introduction

- 6.1 The policies in this development management chapter seek to protect people, places and the environment from potential negative impacts from mineral development and to ensure that positive gains are maximised. The issues addressed in policies MLP 17 to MLP 30 will influence the design, layout, working methods and restoration proposals for the site.
- 6.2 The potential for different impacts and benefits, and the management and mitigation measures that are appropriate, will vary according to the nature, size, location and duration of a development, and will change over the life of a mineral site. Good design is a key aspect of sustainable development, creating better places in which to live and work, and helping to make development acceptable to communities. With appropriate site design, working methods and mitigation measures in place it is usually possible to adequately manage impacts and to deliver enhancement. In some cases, judgement will be required about the balance between the importance of the mineral to be worked and the likely impacts of the proposal.

- 6.3 The Minerals Local Plan policies cover the administrative area of Worcestershire, but it is recognised that a development's impacts may be felt further afield, even if applications do not cross the county boundary. Applications should make clear the physical extent of any impacts (both positive and negative) as well as their significance. Net gain both within and extending beyond the county boundary is welcomed and will be considered favourably.



Public consultation

Prudent use of resources

Policy MLP 17: Prudent Use of Resources

Contributing to:

Objectives MO1, MO3, MO5, MO6

Mineral development will be permitted where it is demonstrated that the proposed development will make prudent use of natural resources.

A level of technical assessment appropriate to the proposed development will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) minimise use of water and energy in buildings, plant and transport;
- b) optimise on-site energy generation from renewable and low-carbon sources; and
- c) balance the benefits of maximising extraction with any benefits of allowing sterilisation of some of the resource, taking account of:
 - i. the need for the mineral resource;
 - ii. the ability to deliver the relevant strategic corridor priorities;
 - iii. the ability to provide an appropriate landform for beneficial after-use;
 - iv. the ability to deliver high-quality restoration at the earliest opportunity;
 - v. the appropriateness of importing fill materials on to site, and the likely availability of suitable fill materials;
 - vi. the need to protect and enhance inherent landscape character; and
 - vii. the need to manage or mitigate impacts on the built, historic, natural and water environment and amenity.

Reasoned justification

6.4 Minerals are essential to support sustainable economic growth and our quality of life. They are a finite natural resource and it is important to make best use of them to ensure resources remain available for future use. However, mineral development needs to be designed, worked and restored in a way that ensures minerals are extracted efficiently whilst ensuring that high-quality restoration and after-use is achieved.

Water and energy efficiency

6.5 The winning and working of minerals can require significant amounts of water and energy. The Mineral Planning Authority will expect energy and water efficiency measures to be incorporated in plant, buildings and transport. For the operator, resource efficiency can provide cost savings as well as reduced carbon emissions.

6.6 Washing and processing minerals can be water intensive. Measures such as water recirculation and capturing any run-off from buildings or hardstanding for use on site can help to reduce the overall demand for water within operations. Good site design can help with the management of stockpiles⁴¹⁰ and reducing transport movements around the site.

6.7 Buildings and plant should be designed to minimise energy use by utilising landform, layout, building orientation, massing and landscaping. Opportunities should be sought to maximise energy efficiency and minimise carbon emissions from processing, heating and drying of materials and from running machinery, motors and drives.⁴¹¹ The use of low-emission vehicles⁴¹² where appropriate and ensuring plant, vehicles and conveyors are well maintained and operated in an efficient manner can help to reduce energy demands.

6.8 Policy MLP 17 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should take account of requirements for plant, buildings and transport throughout the life of the site. Assessments should:

- identify the site processes which require water and energy;
- estimate the total amounts of water and energy that will be required per annum; and
- include details of the technology, design, working methods and any other mitigation measures considered and set out how the chosen combination will minimise water and energy use.

Energy generation

6.9 Opportunities to use locally generated renewable or low-carbon energy for extraction, processing and transport operations as well as for lighting, heating and cooling buildings, should be explored as this can make a valuable contribution to cutting greenhouse gas emissions. Renewable or low-carbon energy options might include

conventional building-mounted sources, but might also make use of opportunities over the wider site, such as open-loop ground source or surface water source heating and cooling systems.

6.10 Policy MLP 17 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should take account of the whole life of the site. Assessments should:

- Identify the potential opportunities for on-site renewable and low-carbon energy production. This should consider the life-cycle of any potential plant in relation to the life of the proposed development, as any plant installed may need to be removed as part of the restoration of the site.
- Give details of the renewable energy generation measures proposed and why these are considered to be the optimal solutions for the site. This might include reference to limitations imposed by working and restoration phases or other Development Plan policies.
- Set out the total amount of energy expected to be produced from the proposed renewable and low-carbon sources and the proportion of the site's energy requirements that this would supply.
- In any cases where on-site renewable energy generation is not considered to be appropriate or practicable, justify why this is the case.

Optimising the amount of mineral resources won and worked from the site

6.11 The primary purpose of the Minerals Local Plan and minerals development is to enable the supply of mineral resources, but there is a balance to be struck between enabling supply and delivering the wider objectives of the plan. Whilst there is a need to avoid undue sterilisation of mineral resources, in some cases it may be necessary to limit the amount of mineral resource extracted in order to avoid other unacceptable harm or to ensure delivery of high-quality restoration and after-use.

⁴¹⁰ Keeping stockpiles drier or allowing natural drying of wet minerals can significantly reduce energy demands for processing and transport.

⁴¹¹ Carbon Trust, *Mining and quarrying: Carbon saving and energy efficiency advice for the mining and quarrying sector*, <https://www.carbontrust.com/resources/guides/sector-based-advice/mining-and-quarrying>.

⁴¹² Including non-fossil fuels and electric vehicles.

- 6.12 Designing an achievable site restoration scheme is a crucial aspect of sustainable mineral development and, without such a scheme, planning permission will not be granted for mineral working.⁴¹³ High-quality restoration should take place at the earliest opportunity, and appropriate aftercare should be put in place⁴¹⁴. In most cases, this will mean phased working and restoration across the site, thereby minimising the area of land occupied by mineral working at any one time. This can help to give communities confidence that high-quality restoration is taking place, can help to minimise any cumulative impacts with other existing or proposed development, and can enable green infrastructure benefits to be realised or commercial use of the land to be resumed during the life of the wider site.
- 6.13 Designing and delivering a landform that will enable the beneficial after-use of a site, which is appropriate within the local context, and which enables delivery of the relevant strategic corridor priorities is fundamental to the overall design of mineral sites. The Mineral Planning Authority welcomes innovative design that enhances the area and responds positively to local priorities, whilst maximising the extraction of mineral resources and ensuring the proposed working and restoration schemes will be deliverable.
- 6.14 Physical and policy constraints on importing fill materials for restoration purposes, and a potential lack of suitable materials are likely to be significant factors in how sites are designed and worked in Worcestershire. The availability of fill materials may also differ across the county, depending on the scale and type of development taking place nearby. This is likely to mean that many sites will need to be worked in a different way than in the past to minimise the need to bring in materials for backfilling, particularly in relation to working solid sand and brick clay, which has historically resulted in deep, steep-sided pits which were then restored by landfilling.
- 6.15 The potential sterilisation of mineral resources will not be considered adequate justification for schemes which would result in unacceptable impacts or unacceptable final landforms.
- 6.16 Policy MLP 17 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should:
- Outline the need for the mineral, drawing on the latest available supply and demand data for that type of mineral at the county level, considering the latest Local Aggregate Assessment,⁴¹⁵ Authority Monitoring Report⁴¹⁶ and other relevant evidence, as well as any cross-boundary and wider demands.
 - Set out details of the proposed after-use of the site and the landform required to enable that after-use. This should consider how the proposed landform will respond to the inherent landscape character and deliver the relevant strategic corridor priorities and any local economic, social and/or environmental benefits.
 - Set out any environmental or amenity constraints and how these will influence site working and/or restoration. This might include measures such as stand-off zones between working areas and sensitive receptors or environmental assets, or limiting the depth of working or wet working of mineral resources at sites that are vulnerable to changes in the water table.
 - Set out the available options for delivering high-quality restoration at the earliest opportunity through phased or progressive restoration, taking into account:
 - the requirements of other policies in the Minerals Local Plan and the Development Plan as a whole;
 - how progress towards delivering the final landform can be ensured from the outset through site design and working methods; and
 - the practicalities of working and processing in relation to the type of operation and nature of the site.
- Any proposals that do not include phased or progressive restoration will require robust justification.

413 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals*, paragraph: 039 Reference ID: 27-039-20140306 Revision date: 06 03 2014.

414 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 204(h).

415 Worcestershire's Local Aggregate Assessments are published alongside the Authority Monitoring Report at www.worcestershire.gov.uk/amr.

416 Worcestershire's Authority Monitoring Reports are available at www.worcestershire.gov.uk/amr.

- Consider whether any backfilling will be required in order to achieve the proposed landform. If backfilling is proposed, the assessment should estimate the volumes of material which would be required at each phase and set out the anticipated sources of backfill materials. The use of materials from within the site (such as overburden and subsoils) should be prioritised before considering the use of imported materials, and the assessment should set out any potential physical and/or policy constraints which would prevent or limit the importation of backfill materials, such as the suitability and capacity of transport infrastructure, impacts on water quality and local amenity, and the legislation, policy, and/or permitting issues concerning landfill.
- Where the use of imported materials is proposed, potential sources of suitable materials (such as other development projects) should be identified within an economically viable distance for transporting materials, and the assessment should refer to the scale, timing and levels of certainty around those projects, and whether there are likely to be other demands for those materials (such as other quarry restorations) which could prevent the proposed restoration scheme being delivered.
- Clearly conclude why, taking into account the balance of considerations in the above points and the priorities of the relevant strategic corridor, the proposed strategy is considered to be the optimal solution for the site.
- Where the proposal is for changes to working and/or restoring an existing permitted site, the assessment should demonstrate that any previously agreed restoration and aftercare requirements will not be compromised. Proposals that seek to vary previously permitted restoration and aftercare schemes should demonstrate why the proposed changes are necessary and how the revised scheme will achieve the same or increased environmental, social and economic betterment as the permitted scheme.



Green Belt

Policy MLP 18: Green Belt

Contributing to:

Objectives MO3

Where the proposed development is within the Green Belt, a level of technical assessment appropriate to the proposed development will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) preserve the openness of the Green Belt; and
- b) not conflict with the purposes of including land within the Green Belt.

Where the proposed development will not preserve openness or will conflict with the purposes of including land within the Green Belt, planning permission will not be granted unless very special circumstances are demonstrated to exist whereby the potential harm to the Green Belt by reason of inappropriateness, and any other harm resulting from the proposal, is clearly outweighed by other considerations.

Reasoned justification

6.17 The Green Belt extends across north-east Worcestershire, covering almost a quarter of the county. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open. The essential characteristics of the Green Belt are its openness and permanence.⁴¹⁷



Stockpiles of recycled aggregates

6.18 A range of mineral resources exist within the Green Belt, and there is overlap between areas of Green Belt and three of the strategic corridors.⁴¹⁸ It is therefore likely that minerals development proposals within the Green Belt will come forward during the life of the Minerals Local Plan. Mineral extraction is one form of development that is not inappropriate in the Green Belt, provided that it preserves the Green Belt's openness and does not conflict with the purposes⁴¹⁹ of including land within the Green Belt. However, some aspects of minerals development may have an impact on the openness of the Green Belt or may conflict with its purposes, and could therefore be inappropriate. As such, very special circumstances may need to be demonstrated for mineral developments, or elements of them, if they are to be considered acceptable.

417 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 133.

418 Salwarpe Tributaries Strategic Corridor, North East Worcestershire Strategic Corridor and North West Worcestershire Strategic Corridor. The strategic corridors and the Green Belt can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

419 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 134.



Processing solid sand at Wildmoor Quarry, near Bromsgrove

6.19 Policy MLP 18 requires an appropriate level of technical assessment to be submitted with each application within the Green Belt. Such assessments should be undertaken by an appropriate and competent expert, should be proportionate to the nature, location and size of the proposed development and the potential harm it could have on the Green Belt, and should:

- identify how the proposed development (including enabling and ancillary works, such as access routes, in addition to the main working area) would affect the characteristics and purposes of the Green Belt at all stages of the site's life;
- identify which parts of the proposed development, if any, constitute inappropriate development in the Green Belt; and
- if the proposed development or any part of it would be inappropriate development, set out the very special circumstances that exist to justify the development. Very special circumstances will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations.

6.20 Very special circumstances will need to be considered on a case-by-case basis and will depend on the circumstances of any proposed development. The presence of minerals - which can only be developed where they exist - and the contribution they can make to maintaining a steady and adequate supply, may be capable of being relevant considerations, depending on the circumstances at the time of any application.

6.21 National policy⁴²⁰ requires local planning authorities to “plan positively to enhance the beneficial use of the Green Belt”. Minerals development and, especially, the restoration of workings, may be capable of enhancing one or more of these beneficial uses and should be guided by the green infrastructure priorities of the relevant strategic corridor. These opportunities will not negate the need to comply with protective Green Belt policy.

⁴²⁰ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 141 states that “Once Green Belts have been defined, local planning authorities should plan positively to enhance their beneficial use, such as looking for opportunities to provide access; to provide opportunities for outdoor sport and recreation; to retain and enhance landscapes, visual amenity and biodiversity; or to improve damaged and derelict land”.

Amenity

Policy MLP 19: Amenity

Contributing to:

Objectives MO4, MO5

Planning permission will be granted where it is demonstrated that the proposed mineral development, including associated transport, will not give rise to unacceptable adverse effects on amenity, health and well-being, the environment, or areas of tranquillity.

A level of technical assessment appropriate to the proposed development will be required to demonstrate that, throughout its lifetime, the proposed development will not cause unacceptable harm to sensitive receptors from:

- a) air quality;
- b) dust;
- c) odour;
- d) noise and vibration;
- e) light;
- f) visual amenity and visual intrusion;
- g) land instability; and/or
- h) contamination.

Reasoned justification

6.22 Mineral sites can cause concern to local communities because of possible disturbance or harmful effects on people's amenity, health and well-being, and living and working environments. Securing a high standard of amenity is fundamental to creating well-designed development⁴²¹ and policy MLP 19 seeks to ensure that minerals developments are planned, managed and restored in a way that protects people and other sensitive receptors from unacceptable effects on health and well-being, amenity, and tranquillity. The method, phasing and lifespan of mineral workings, their distance to sensitive receptors and land uses, and their relationship to their locality will influence the nature and likelihood of such impacts.

6.23 Policy MLP 19 addresses a broad range of issues which should be considered to ensure there are no unacceptable adverse effects on the amenity or health of communities or the wider

environment. The policy requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should be proportionate to the nature, location and size of the proposed development and the significance of its effects. The assessments will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area, and will need to consider the impacts which might occur at all stages of the site's life. For each of the issues identified in policy MLP 19, the assessment(s) should:

- identify the sensitive receptor(s) which may be affected by the proposed development, including any existing residents (with particular attention being paid to disadvantaged sections of communities), businesses, land users and sensitive environmental assets, as well as any potential future occupants of sites allocated in Local Plans or Neighbourhood Plans;

⁴²¹ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 127(f).

- quantify the extent of potential impacts at each stage of the proposed development in relation to the baseline conditions, taking account of how the local context (such as topography, watercourses and water features, and man-made structures and infrastructure including roads, railways and waterways) will influence any potential impacts or pathways for effects;
- consider the potential for cumulative impacts with other existing or approved development;
- demonstrate the measures which would be implemented to ensure adverse impacts would be avoided at source or, where this is not possible, outline the proposed management and mitigation measures to reduce effects to an acceptable level; and
- identify the significance of any residual effects.

6.24 The form which such technical assessments should take will depend on the scale and nature of the proposed development, and in some cases issues may be addressed through an Environmental Impact Assessment. Where there are expected to be significant health impacts,⁴²² a Health Impact Assessment (HIA)⁴²³ can be a useful tool to enhance the positive aspects of a proposal through assessment, while avoiding or minimising any negative impacts, with particular emphasis on disadvantaged sections of communities that might be affected.

6.25 Developers are expected to proactively monitor impacts and emissions throughout the life of the site to enable issues to be addressed swiftly. Close liaison with communities can help to identify issues and enable feedback and dialogue on the need for and effectiveness of any mitigation measures.

6.26 A wide range of amenity impacts can be mitigated through appropriate site design and layout and the use of the surrounding topography. Complementing the existing features of the natural environment can also deliver wider multifunctional benefits. A common approach to mitigating amenity impacts is to include tree planting or natural screening; this can deliver

landscape, biodiversity, and water environment benefits where proposals are influenced by the local context, and should be incorporated in a way which responds to the relevant strategic corridor priorities (see MLP 3 to MLP 8). Other mitigation measures could be realised through considerate site design and working practices including, but not limited to, locating working areas, plant, machinery or haulage routes away from sensitive receptors; fitting plant with silencers; sheeting of lorries and cleaning of wheels before vehicles exit the site; or limiting working hours.

Air quality

6.27 Increases in air pollutants can have harmful effects on human health and the natural and historic environment.⁴²⁴ Air quality impacts from mineral development are most likely to arise as a result of emissions from plant and processing equipment or from the impact of associated transport movements. There may also be temporary impacts from some phases of development, such as site preparation or restoration and plant construction.

6.28 Assessments of air quality impacts should take account of the baseline local air quality and the likely changes to air quality throughout the life of the development. Where impacts are likely to result from transport movements this should consider traffic impacts in the immediate vicinity of the proposed development site and further afield. Any assessment should be proportionate to the nature and scale of the development proposed and the likely impacts.⁴²⁵ Particular consideration will need to be given to air quality impacts in or impacting upon areas where air quality is known to be poor, such as designated Air Quality Management Areas (AQMAs) or areas that are at risk of designation, or where impacts on sensitive or protected species or habitats⁴²⁶ could arise. Where relevant, reference should be made to the Worcestershire Air Quality Action Plan⁴²⁷ and corresponding action plans of surrounding areas.

422 Worcestershire County Council (March 2016) *Health Impact Assessments in Planning Toolkit* advocates undertaking health impact screening to determine whether significant health impacts are likely to arise, prior to scoping the extent of any assessment which may be required. The toolkit is available at http://www.worcestershire.gov.uk/info/20122/joint_strategic_needs_assessment.

423 Health Impact Assessment (HIA) is a process to predict the health implications on a population of implementing a plan, policy, programme or project, aiding the decision-making process.

424 Defra (2018) *Clean Air Strategy 2018*.

425 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Air Quality*, paragraph: 007 Reference ID: 32-007-20140306 Revision date: 06 03 2014.

426 Particularly sites which would be included within the definition at regulation 8 of the Conservation of Habitats and Species Regulations 2017.

427 www.worcsregservices.gov.uk/pollution/air-quality.aspx.



Wheel washing facility at Clifton Quarry

6.29 Where impacts are likely, the assessment should identify the mitigation measures to be put in place. Mitigation might include routing agreements, controlling emissions from plant or vehicles, alternative site design, layout, working methods or phasing of operations to increase the distances between sources of pollution and potential receptors, or planting and screening to help contain particulates.

Dust

6.30 Dust can arise from extraction activities, the operation of processing plant, haulage vehicles and conveyors, and the storage of minerals and soils, where dust can be windblown from stockpiles. There may be temporary impacts from some phases of development, such as site preparation works, soil stripping, or restoration works. If not properly controlled at source, dust can cause nuisance to people and businesses, and harm through deposition on property, farmland, and natural and historic features.

6.31 A dust assessment will be required where dust emissions are likely to arise from a development. The assessment should take account of the location of the source of dust and the surrounding land uses as well as local factors that might affect the dispersal of dust, including topography, the nature of the landscape, and local wind patterns. Atmospheric dispersion modelling may be required to determine whether there is a risk of health effects due to dust emissions. Where necessary, mitigation proposals should be outlined. These might include the design, layout and phasing of operations to increase the distances between sources of pollution and potential receptors, locating dusty operations downwind of receptors, or using planting and screening to absorb pollutants. Working practices such as wheel washing, damping haul roads and sheeting of lorries can also be effective.

Odour

6.32 Mineral sites are unlikely to be a source of odour. However, there is some potential for odours to arise from on-site water bodies, such as settlement and silt lagoons, or areas of water that are poorly designed or managed. Applications should identify any potential odour sources and demonstrate how they will be managed effectively to prevent unacceptable effects occurring.

Noise and vibration

6.33 The introduction of sources of noise or vibration can impact on the use, enjoyment and tranquillity of a locality, and can cause an intrusion that can adversely impact on quality of life, health and well-being.⁴²⁸ As well as causing annoyance to other land users, noise can also impact on wildlife, particularly where introduced to previously quiet areas.

6.34 Potential sources of noise within typical mineral operations include extraction activities and the operation of processing plant, haulage vehicles and conveyors. Activities such as soil-stripping, the construction and removal of baffle mounds, soil storage mounds and spoil heaps, the construction of new permanent landforms, and aspects of site road construction and maintenance may also be noisy in the short term. Each source of noise might have a different characteristic and intensity, and could be capable of causing significant impacts if not properly controlled. After-uses also have the potential to introduce or alter the source, type or level of noise arising from the site.

6.35 Vibration associated with mineral operations is principally caused by vehicle movements, particularly over uneven surfaces. Blasting can be used at some crushed rock workings and can cause both ground vibration and air overpressure.

6.36 An assessment will be required where there are likely to be impacts from noise or vibration. This should identify potential sources of noise and vibration, their general character and the location of noise-sensitive or vibration-sensitive properties and environmental assets. Reference should be made to the types and levels of noise or vibration, the time of day noise or vibration will occur, whether they will be continuous or intermittent and the pattern and duration of their occurrence, as well as the prevailing acoustic environment and local factors such as topology and topography.⁴²⁹

6.37 Where noise or vibration impacts are identified, mitigation measures should be incorporated to ensure that effects are managed to an acceptable level. This might include appropriate design, layout and phasing of operations to increase the distances between the source of noise and potential receptors or to minimise noise transmission through the use of screening by natural barriers, planting or purpose-built features. Setting noise limits at sensitive properties, controlling working hours, and/or monitoring of noise conditions at mineral workings could also safeguard against disturbance from the site.⁴³⁰

6.38 Where noise impacts cannot be avoided it may be appropriate to allow temporary increases in daytime noise to facilitate essential site preparation or restoration works; however, clear long-term benefits would need to be demonstrated.⁴³¹

Light

6.39 Insensitive use of lighting that causes glare, unnecessary light spillage beyond site boundaries and sky glow can annoy people, harm wildlife, undermine enjoyment of the countryside, and detract from appreciation of the night sky.⁴³²

6.40 Certain areas of a mineral site, such as the processing plant and/or stockpiling areas, 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 after-use.

428 Defra (2010) *Noise Policy Statement for England*.

429 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Noise* (Revision date: 06 03 2014) and Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals* (Revision date: 17 10 2014).

430 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals* (Revision date: 17 10 2014).

431 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals*, (paragraph: 022 Reference ID: 27-022-20140306 Revision date: 06 03 2014) advises that this would be for periods of up to 8 weeks in a year.

432 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Light Pollution* (Revision date: 06 03 2014).

- 6.41 A lighting assessment will need to identify whether proposals for lighting materially alter light levels outside the development. This should consider the type, brightness, position, height, alignment, intensity and periods of use of luminaires. Consideration should be given to impacts on the use and enjoyment of other land uses, impacts on environmental assets and protected species and impacts on intrinsically dark landscapes. Proposals should demonstrate how light pollution will be avoided or managed to an acceptable level. Mitigation measures might include directional lighting, limiting working hours, or screening areas of the site with appropriate planting.

Visual amenity and visual intrusion

- 6.42 In planning law, no individual has the right to a particular view. However, in some cases, a change in outlook has the potential to materially harm visual amenity and impact on tranquillity. The impact of mineral development on visual amenity and visual intrusion will depend on the nature of the working, the location of the site, its context within the topography and form of the landscape and the visual exposure of working faces, plant and haul routes or conveyors.
- 6.43 Where visual impacts are likely an assessment will be required to assess the significance and effects of changes to views and visual amenity as a result of the proposed development. This assessment may form part of a holistic Landscape and Visual Impact Assessment. It should identify sensitive landscape receptors, and sensitive visual receptors, such as residential properties or public rights of way, and consider how they might be affected by visual impacts from the development throughout its phases. Changes in specific views and people's experience of general visual amenity should be considered.⁴³³
- 6.44 It may be possible to minimise or mitigate effects through considerate design and phasing of the development and using planting to screen or filter views. Care should be taken to ensure that screening measures are appropriate and are not, in themselves, a source of visual intrusion. It is likely that, as part of site restoration, there will be a requirement to remove incongruous features such as bunds or security fencing.
- ### Land instability
- 6.45 Proposals should demonstrate the measures to be used to ensure that quarry sides and slopes remain stable and will not result in landslip, either within the site or on adjoining land, both during and after the lifetime of the development. Quarry slopes and tip slopes should be constructed and accessed to minimise any risk of danger through instability. Where there is any likelihood of instability, a stability report should be provided setting out appropriate measures to ensure the continued stability and integrity of any slopes within the site, including appropriate gradients and management of run-off. Planting slopes with suitable vegetation can assist with stability and can provide environmental benefits. Where risks of instability cannot be adequately mitigated, there may be a need to leave some parts of the site unworked, or to allow for margins within or around the site.
- 6.46 The backfilling of quarries should not create unacceptable instability risks. Backfilling with overburden, mineral waste materials and any other material or waste used in restoration should be planned and delivered to minimise the risk of unacceptable differential settlement.
- 6.47 Subsidence occurs through the loss of support beneath the surface of the ground, and the level of risk is likely to depend on the nature of the underlying geology. Fine particles in sand and gravel are susceptible to being washed away by water, and loosely packed sand under the water table acts in a similar way, moving into any voids surrounding it. Limestone can be dissolved over time by running water, creating voids that can collapse and cause swallow holes. Clays can expand and contract with wetting and drying, 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, 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. Rock salt can dissolve to form brine, and subsidence associated with historic brine extraction was experienced in and around Droitwich Spa.

⁴³³ Landscape Institute (2013) *Guidelines for Landscape and Visual Impact Assessment* (Third edition).



Safety warning at a working sand and gravel site

6.48 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.

Contamination

6.49 There is potential for minerals development to involve the storage and use of fuels, explosives and other hazardous substances⁴³⁴. This could result in hazards to or contamination of land and water if storage and plant areas are not appropriately designed and managed. On minerals sites, fuels and chemicals are most commonly stored in plant areas and used in the operation and maintenance of sorting and processing plant, haulage vehicles, and conveyors. Explosives may be used for blasting at some crushed rock sites.

6.50 Applications should identify any proposals for the use or storage of hazardous substances and any other potential sources of pollution, the pathways through which contamination could travel, and receptors that could be affected, including people and environmental assets. This should inform any mitigation proposals. Mitigation measures commonly include areas of hardstanding or containment bunds around storage areas. The potential impact of flooding or severe weather events should be taken into account.

6.51 Hazardous substances consent may also be required. The hazardous substances consent process ensures that necessary measures are taken to prevent major accidents and limit their consequences to people and the environment where there is considered to be a major off-site risk. This is separate to the planning regime.⁴³⁵

434 As defined by *The Planning (Hazardous Substances) Regulations 2015*.

435 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Hazardous substances* (Revision date: 28 07 2017).

Access and recreation

Policy MLP 20: Access and Recreation

Contributing to:

Objectives MO2, MO3, MO4, MO5

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect and enhance rights of way and public access provision.

A level of technical assessment appropriate to the proposed development will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) optimise opportunities to enhance the rights of way network and provision of publicly accessible green space, integrating other green infrastructure components where appropriate;
- b) not have an unacceptable adverse effect on the integrity and quality of publicly accessible green space;
- c) not have an unacceptable adverse effect on the integrity and quality of the existing rights of way network; and
- d) retain rights of way in situ unless it is demonstrated that this is not practicable:
 - i. where it is demonstrated that retaining rights of way in situ is not practicable, temporary or permanent diversions will be expected to achieve an enhanced route and level of access provision over that which was previously available and must be for as short a distance and duration as practicable; and
 - ii. closure of any rights of way must only occur where it is demonstrated that it is not practicable to retain rights of way in situ and no suitable temporary or permanent diversion is possible. Compensatory provision must be made.

Reasoned justification

- 6.52** Access and recreation plays a key role in the continued social, environmental and economic well-being of the county.⁴³⁶ Rights of way and open spaces provide opportunities for public access to green space and form an important component of sustainable transport links, both of which contribute towards health and well-being. They are also an important part of Worcestershire's high-quality environment and green infrastructure network, providing green corridors and contributing significantly to the county's heritage and local character.
- 6.53** Mineral development can impact on existing recreation assets, particularly rights of way, but also offers significant potential to provide publicly accessible green spaces and to extend and enhance public access networks. The National Planning Policy Framework is clear that

planning policies should protect and enhance public rights of way and access.⁴³⁷

Enhancement of the rights of way network and provision of publicly accessible green space

- 6.54** The scale and location of mineral development and the proposed after-use will influence the potential contribution that a mineral site can make to the enhancement of access and recreation provision. There is likely to be greatest potential at sites that are already accessible to the public, are close to existing access networks, or which connect areas where there is currently poor provision, whilst there may be less potential at sites which include habitats that are sensitive to disturbance or where landforms or other features mean that public access needs to be restricted for safety reasons.

⁴³⁶ In the 2009 Worcestershire Viewpoint survey, 93% of residents classed parks and open spaces as either "important" or "very important".

⁴³⁷ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 98.

6.55 To demonstrate how opportunities to enhance the rights of way network and provision of publicly accessible greenspace will be optimised, policy MLP 20 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should:

- Identify whether access and recreation is a priority for the relevant strategic corridor (see policies MLP 4 to MLP 8) and consider what opportunities exist for the site to contribute towards delivering this at each stage of the site's life.
- Consider the opportunities which exist to enhance the rights of way network and the provision of publicly accessible green space on or around the site. This might include the enhancement of rights of way which will be retained on site, providing linkages between other routes or assets in the network, particularly where they contribute to long-distance recreation routes and national networks, or enabling informal access to open spaces for play, sports or walking. This should give particular consideration to how enhancements could contribute to improving health and well-being or enhancing tourism opportunities.
- Set out how these opportunities have informed development proposals and how enhancement will be delivered. This should take account of the site context, layout and topography and the impact of proposed new routes or accessible green spaces on the natural and historic environment, amenity and landscape character, and should include consideration of how routes and spaces will be managed and maintained.
- Where enhancing rights of way or provision of accessible green space is not considered appropriate, robust justification should be provided to demonstrate why enhanced access is not appropriate. This might relate to safety hazards, or the need to protect sensitive habitats, heritage assets or landscape features.

6.56 Opportunities to integrate public access and recreation enhancement with other green infrastructure components might include the use of locally appropriate planting to define routes or areas for access, or the provision of viewing points, interpretation boards or information about the area and its significance in relation to issues such as biodiversity, geodiversity or the historic environment.

Publicly accessible green space

6.57 Policy MLP 20 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area, and will need to consider the impacts which might occur at all stages of the site's life. They should:

- Identify any publicly accessible green spaces on or in proximity to the application site, and outline their role in local, county, and regional scale provision. The *Worcestershire Green Infrastructure Framework* documents⁴³⁸ may provide a useful starting point.
- Identify the impact of the proposal on these green spaces and the integrity of the wider network, considering current levels of use and the capacity of other relevant assets within the network. This should take account of the whole life of the minerals development and should identify any mitigation measures required to ensure that impacts will be adequately managed.

6.58 Where, after mitigation measures have been put in place, a development proposal would result in residual negative effects on the integrity and quality of publicly accessible green space, compensatory provision may be necessary. Clear justification should be included to demonstrate why the benefits of the proposed development outweigh the impacts.

438 <http://www.worcestershire.gov.uk/gi>.

Existing rights of way

6.59 Policy MLP 20 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area, and will need to consider the impacts which might occur at all stages of the site's life. They should:

- Identify all current access routes within the application site and any other routes in proximity to the site that might be impacted by the proposal, including footpaths, bridleways, restricted byways, and byways open to all traffic, with reference to the Rights of Way Definitive Map and Statement for Worcestershire.⁴³⁹ Reference should also be made to other access routes such as cycleways, permissive access, access land, canal towpaths and footways.
- Identify the impact of the proposal on these access routes and on the integrity and enjoyment of the wider network. This should include consideration of the impact of the proposal on public access routes and the integrity of the wider network, considering current levels of use and the capacity of other relevant routes within the network, and should include assessment of the impacts on local character, cultural heritage and the wider access network. This should take account of the whole life of the minerals development and should identify any mitigation measures required to ensure that impacts will be adequately managed.

6.60 Details should be provided of how the design of the site has taken into account the need to retain rights of way in situ. Where retaining rights of way in situ is not considered practicable, robust justification will be required to demonstrate this, and consideration should be given to the impacts of any proposed temporary or permanent diversions or permanent closures.

6.61 Where temporary or permanent diversions are required, details should be provided of why the existing route cannot be retained in situ, how the rights of way will be restored in a timely manner and how an enhanced route and enhanced levels of access provision will be provided, including details of the proposed route and length of the diversion, the materials to be used and the access implications for users. In some cases temporary diversions may be for several weeks, in other cases they may be for the duration of a particular phase or the working life of the mineral development. Enhancement of the route could be achieved through improving views, stopping points and/or surfacing, or diversions which provide or retain locally or culturally important linkages. Enhanced levels of access provision might include disabled access or enabling multi-use routes such as bridleways or cycleways where appropriate.

6.62 Where permanent closure is proposed, strong justification should be included to demonstrate why it is not possible to retain rights of way in situ and why no suitable diversion is possible. The Mineral Planning Authority will expect compensatory provision to be made proportionate to the scale of the closure. This would be expected to include additional rights of way to enhance the network or, where this is unachievable, a distinct and obvious improvement to the existing local network.

6.63 Diverting or closing a right of way, whether on a temporary or permanent basis, follows a separate application process.



**Blackstone Riverside Park, near Bewdley
Worcestershire**

⁴³⁹ <http://www.worcestershire.gov.uk/countryside>.

Biodiversity

Policy MLP 21: Biodiversity

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect, conserve, enhance and deliver net gains for biodiversity.

A level of technical assessment appropriate to the proposed development and its potential impacts on biodiversity will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) conserve, restore and enhance ecological networks and deliver net gains for biodiversity, integrating other green infrastructure components where appropriate;
- b) minimise adverse effects on and avoid significant harm to biodiversity;
- c) not adversely affect the integrity of a European site, or clearly demonstrate that there are no alternative solutions and there are imperative reasons of overriding public interest which justify the likely effects (where adverse effects are justified, appropriate compensatory measures will be required to ensure that the overall coherence of Natura 2000 is protected);
- d) not be likely to have an adverse effect on a Site of Special Scientific Interest and its notified features, unless the benefits of the development clearly outweigh both its likely impact on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest and appropriate mitigation and/or compensation measures are proposed;
- e) not result in the loss or deterioration of irreplaceable habitats, including ancient woodland and ancient or veteran trees, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- f) not result in significant harm to a Local Wildlife Site or locally important ecological networks identified in the Local Biodiversity Action Plan unless the need for, and benefits of, development in that location would clearly outweigh the harm and appropriate mitigation and/or compensation measures are proposed.

Reasoned justification

6.64 Minerals operations usually take place on greenfield land and result in physical change to the site's biodiversity.⁴⁴⁰ The quality and value of existing habitats can vary significantly and are influenced by land uses and land management practices. Development could affect valued habitats and species even where they are some distance away, including through airborne and

hydrological pathways. As such, the impacts of mineral workings on biodiversity often extend beyond the site boundary.

6.65 Mineral development can also provide an opportunity to create valuable habitats and enhance existing networks, primarily through site restoration but also during site preparation and working.⁴⁴¹

⁴⁴⁰ Biodiversity (or "biological diversity") means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. This is the definition provided by the UN Convention on Biological Diversity, which subsequently appeared in the UK Biodiversity Action Plan. In simple terms, this means the diversity of plants and animals and the interactions between them.

⁴⁴¹ *Nature After Minerals*, available at <http://afterminerals.com>. Nature After Minerals (NAM) is a partnership programme, led by the RSPB and supported by Natural England, the Mineral Products Association and the British Aggregates Association. The programme came about as a result of a report produced by the RSPB in 2006, which highlighted the great opportunity for biodiversity gain through minerals restoration (Davies, A, *Nature After Minerals: How mineral site restoration can benefit people and wildlife*). The *Nature After Minerals* programme promotes the strategic opportunities for delivering biodiversity through high quality habitat creation on mineral sites and works with mineral planners, industry, statutory bodies, conservation organisations and local communities, to make substantial contributions to priority habitat creation and boost priority species populations, while providing richer places for people to enjoy.

- 6.66 The nature and scale of impacts on biodiversity are determined in part by the methods, phasing and lifespan of mineral workings, the location of the proposal in relation to biodiversity features and ecological networks, the type of restoration proposed, and the relationship of the site to its surroundings.
- 6.67 In some cases, a stand-off zone between mineral working and particular habitats may be necessary to protect vulnerable features, with the size or shape of the stand-off defined on a case-by-case basis dependent on the attributes of the site and its surroundings. However, where unacceptable harm can be avoided and greater overall benefits could be realised, it may be appropriate to work close to such features, particularly where this would improve connectivity between isolated or fragmented habitats.

Conserving, restoring and enhancing ecological networks and delivering net gains for biodiversity

- 6.68 Mineral working and restoration will be expected to contribute measurable net gains in habitats and ecological networks within and beyond the site and at a wider landscape scale, taking account of the attributes of the site and of the relevant strategic corridor. Policy MLP 21 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will be expected to set out a clear strategy for delivering measurable net gains for biodiversity as an integrated part of multifunctional green infrastructure, and should demonstrate how the proposed development will support coherent and resilient networks of habitats that link the site to the wider landscape, enhance river corridors, and/or provide stepping stones between existing sites or habitats to help reduce habitat fragmentation.⁴⁴²
- 6.69 The technical assessment should consider the opportunities which exist for conserving, restoring and enhancing ecological networks and delivering net gains for biodiversity, in line with the relevant strategic corridor priorities. This should include consideration of Biodiversity 2020⁴⁴³ and best practice guidance⁴⁴⁴, taking into account any principal protected species⁴⁴⁵, local Biodiversity Action Plan targets, biological and chemical water quality,⁴⁴⁶ the Worcestershire Habitat Inventory⁴⁴⁷, and *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*⁴⁴⁸. The assessment should clearly set out how biodiversity enhancements will be provided at each stage of the life of the site and how the proposed net gains will be measured and monitored.
- 6.70 By proactively designing and delivering integrated green infrastructure, mineral working and restoration has substantial potential to enhance biodiversity alongside other priorities. The early installation of biodiversity features during working phases or early restoration phases, and positive management of these and any retained features over the remaining life of the site, will bring greater overall gains for biodiversity than where features are only delivered during final restoration. Multifunctional green infrastructure measures that might be incorporated in site working and/or restoration should be guided by the priorities of the relevant strategic corridor (see policies MLP 4 to MLP 8).

442 The *Worcestershire Habitat Inventory* can be used as a tool to identify habitat network fragmentation and resilience, and is available at http://www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory.

443 Defra (August 2011) *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*.

444 Best practice guidance principles of net gain for biodiversity may include <https://www.cieem.net/biodiversity-net-gain-principles-and-guidance-for-uk-construction-and-developments> and <https://www.gov.uk/guidance/natural-environment>.

445 As specified in lists prepared under Section 41 of the *Natural Environment and Rural Communities Act 2006*.

446 Local level actions and decision making can help secure improvements to the water environment as part of a catchment-based approach to delivering the aims of the Water Framework Directive. The Environment Agency's *Catchment Data Explorer* tool enables information about catchments and the water bodies in them to be explored. It is available at <http://environment.data.gov.uk/catchment-planning>.

447 Available at http://www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory.

448 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.

Protecting biodiversity

6.71 Policy MLP 21 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area. They will also need to consider the impacts which might occur at all stages of the site's life. They should:

- Identify and describe the existing biodiversity value, including species, habitats and ecological networks, within and surrounding the site and how they could be affected at every stage of the proposed development. As a minimum a Preliminary Ecological Assessment should be undertaken, identifying any Worcestershire Biodiversity Action Plan species and habitats, any species and habitats records held by the Worcestershire Biological Records Centre, and any international, national and local designations and protected species which could be affected by the proposed development.
- Assess whether the proposal, either individually or cumulatively with other existing or proposed development, would be likely to cause harm to any existing species, habitats or designated sites. The significance of any harm should be established, taking into account the status of the sites, habitats or species which would be harmed and the contribution they make to wider ecological networks. This should include details of measures taken to avoid or otherwise reduce harm through considering alternative sites where impacts would be less harmful, employing appropriate mitigation (which could include changes to the location and/or methods of on-site working) or, as a last resort, compensation proposals. The assessment should clearly establish the significance of any residual effects.

- Where the proposed development will lead to harm to biodiversity or any site designated for its biodiversity importance, clear justification should be provided.
- The technical assessment accompanying the planning application should 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 biodiversity.

6.72 In the case of a European designation⁴⁴⁹, if it cannot be concluded that the development will not be likely to have a significant effect on the interest features of the site, either alone or in combination with other plans or projects, then an 'Appropriate Assessment' under the Habitat Regulations will be required. The applicant should provide sufficient information to enable the competent authority to undertake an Appropriate Assessment which will determine whether the development will have an adverse effect on the integrity of the site or the Natura 2000 network. The presumption in favour of sustainable development does not apply where development is likely to have a significant effect on a European site, unless an Appropriate Assessment has concluded that it will not adversely affect the integrity of the site.⁴⁵⁰ If an Appropriate Assessment concludes that the proposal would have a significant effect on a European site, then the proposal could only be agreed to where it is demonstrated that there are no alternative solutions and there are imperative reasons of overriding public interest. Where such development is agreed to, all compensatory measures necessary must be taken to ensure that the overall coherence of Natura 2000⁴⁵¹ is protected. Applicants will be expected to provide sufficient detail of the necessary compensation measures and how they will be delivered.

⁴⁴⁹ Sites which would be included within the definition at regulation 8 of the Conservation of Habitats and Species Regulations 2017.

⁴⁵⁰ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 177.

⁴⁵¹ The network of European-designated sites protected under the EU Habitats and Birds Directives, respectively.



6.73 Where mitigation or compensation measures are required, they should be completed on site if practicable. Biodiversity offsetting will only be considered an acceptable solution in wholly exceptional circumstances, and only when the mitigation hierarchy of avoiding, mitigating or compensating for any harm has been fully explored. Any offsetting scheme would need to apply best practice guidance,⁴⁵² and should deliver measurable net gains towards strategic defragmentation of priority habitat networks within the relevant strategic corridor to ensure gains are delivered in the locality of the site for which the offset is required. Any proposals for biodiversity offsetting will be required to address both financial and temporal risks, and provide for ongoing monitoring and habitat management.

6.74 In some cases, a stand-off zone between mineral working and particular habitats may be necessary to protect vulnerable features, with the size or shape of the stand-off defined on a case-by-case basis dependent on the attributes of the site and its surroundings. However, where it brings greater benefit overall, particularly through restoration which improves connectivity between habitats, it may be appropriate to work close to such features.

452 Guidance on biodiversity offsetting can be found at <https://www.gov.uk/government/collections/biodiversity-offsetting>.

Historic Environment

Policy MLP 22: Historic Environment

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect, conserve and enhance the historic environment.

A level of technical assessment appropriate to the proposed development and its potential impact on the historic environment will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) optimise opportunities to enhance the historic environment, including enhancing the condition, legibility and understanding of heritage assets and their setting, integrating other green infrastructure components where appropriate;
- b) not cause any harm to, or loss of significance of, any designated* heritage assets or their setting, or where the proposed development would lead to:
 - i. substantial harm to, or total loss of significance of, any designated heritage assets or their setting, the development will not be permitted unless it is demonstrated that it is necessary to achieve substantial public benefits that outweigh that harm or loss;
 - ii. less than substantial harm to the significance of any designated heritage assets or their setting, the development will only be permitted where it is demonstrated that the harm would be outweighed by the public benefits of the development;
- c) not cause unacceptable harm to, or loss of significance of any non-designated* heritage assets or their setting. The benefits of the proposal will be balanced against the scale of any harm or loss and the significance of the non-designated heritage assets; and
- d) record and advance understanding of the significance of any heritage asset(s) to be lost (wholly or in part), including assets of archaeological interest, in a manner proportionate to their importance and the impact of the loss, and make this evidence and any archive generated publicly accessible.**

* Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments will be considered subject to the policies for designated heritage assets.

** The ability to record evidence of our past will not be a factor in deciding whether such loss should be permitted under part b or c of this policy.

Reasoned justification

6.75 The historic environment is about more than just individual buildings, monuments or sites; it includes places, areas or landscapes that have historic significance and the connections between them. Heritage assets and their settings contribute to sense of place, are valued

by communities, contribute to the quality of life of existing and future generations, and can contribute to the economic vitality of an area. They are an irreplaceable resource which is vulnerable to damage or loss from development,⁴⁵³ and great weight should be given to their conservation.⁴⁵⁴

⁴⁵³ In some cases, Listed Building Consent and/or Scheduled Monument Consent may be required in addition to planning permission. Advice should be sought from the Mineral Planning Authority prior to submitting a planning application.

⁴⁵⁴ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 193.

6.76 Mineral development can impact upon heritage assets either directly, such as by physically disturbing or removing an asset, or indirectly, such as by altering an asset's setting. However, mineral working and restoration can also make a positive contribution to the setting of the historic environment and offers a unique opportunity to contribute to understanding the significance of heritage assets at a landscape scale.

Enhancing the historic environment

6.77 The scale and location of a mineral development and the proposed after-use will influence the potential contribution that a mineral site can make to the enhancement of the historic environment, but there are likely to be significant opportunities to enhance the setting of heritage assets and the quality and legibility of historic landscape character.

6.78 Policy MLP 22 requires proposals to protect, conserve and enhance the historic environment and for the technical assessment to demonstrate how opportunities to enhance the historic environment, including enhancing the condition, legibility and understanding of heritage assets and their setting, will be optimised. This assessment should be undertaken by an appropriate and competent expert, and will be expected to identify opportunities to contribute towards the relevant strategic corridor priorities (see Policies MLP 4 to MLP 8) and to outline how these and any site-specific opportunities have influenced working and restoration proposals to optimise enhancement of the historic environment. The scale of minerals development and the opportunities to take a landscape-scale approach to the working and restoration of sites means that there may be potential to enhance the historic environment through strengthening the visual, historic or aesthetic connections between individual heritage assets, their surroundings and the wider historic environment. Where the site has potential to impact Palaeolithic archaeology or deposits containing significant geological or environmental remains that could advance understanding of the Palaeolithic, the technical assessment should make reference to the *Research Framework for the Palaeolithic in Worcestershire* and supporting documents.⁴⁵⁵

6.79 Considering how the historic environment influences, and is influenced by, the local context provides significant opportunities for the historic environment to be enhanced as an integrated part of multi-functional Green Infrastructure. This might include protecting or reinstating historic landscape features, planting using locally characteristic species, reverting to historic land management practices or enhancing historically significant rights of way.

Protecting designated and undesignated heritage assets

6.80 The method, phasing and lifespan of mineral workings, the location of the proposal in relation to historic assets and features, and the relationship of the site to its locality will influence the type and scale of impacts on the historic environment. Mineral development has the potential to result in direct physical changes to heritage assets, particularly those below ground which are vulnerable to changes in hydrology or chemistry, as well as through physical disturbance. Impacts on the setting of heritage assets or historic landscapes are also likely, particularly where there are significant changes to landforms, or alien features are introduced.



Mammoth tusk at Clifton sand and gravel working

⁴⁵⁵ Hedge, R. et al. (2019) *A Research Framework for the Palaeolithic in Worcestershire* and Russell O, Daffern, N. (2014) *Putting the Palaeolithic in Worcestershire's HER: Creating an evidence base and toolkit*, available at <https://iceageworcestershire.com>, and Fairchild, I. Hedge, R and Bryant, R. (2018) *Lost Landscapes of Worcestershire. The story of the Ice Age in Worcestershire*. ISBN978-1-9998288-1-3.

- 6.81 Policy MLP 22 requires an appropriate level of technical assessment to be submitted with each application.⁴⁵⁶ Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area. They will also need to consider the impacts which might occur at all stages of the site's life. They should:
- Identify the presence and describe the significance of any designated and non-designated heritage assets likely to be affected at any stage of the proposed development. This should give equal consideration to any contribution made by their setting.⁴⁵⁷ As a minimum, the Worcestershire Historic Environment Record⁴⁵⁸ and Worcestershire Historic Landscape Characterisation⁴⁵⁹ should be referred to. Consideration should be given to any visual, historic or aesthetic connections that amplify the experience of the significance of the heritage asset.⁴⁶⁰
 - Where the site has potential to include heritage assets with archaeological interest, the assessment should include an appropriate desk-based assessment and, where necessary, a field evaluation to determine the presence or absence of any heritage assets of archaeological interest and their degree of significance.⁴⁶¹
 - Set out how the design of the site's working and restoration proposals takes account of the presence and significance of heritage assets and their setting, and set out the measures that will be taken to avoid harm or, where this is not possible, otherwise reduce harm through appropriate mitigation, changes to on-site working, or any enhancement proposals. This should include consideration of changes to the environment which might affect the condition of the assets, such as changes to hydrology or chemistry, as well as any direct changes to the assets or their setting.
- Identify whether the proposal, either individually or cumulatively with other existing or proposed development, would cause harm or loss to any heritage assets including appropriate consideration of their setting, clearly distinguishing between designated and non-designated assets and the scale of harm or loss which would be caused. This should also distinguish between temporary and permanent effects from each phase of the proposed development. In considering the impact of the proposed development, great weight will be given to the conservation of designated heritage assets, irrespective of the level of any potential harm or loss.
- 6.82 Where the proposed development would lead to harm to or loss of significance of a designated heritage asset or its setting, assessments will be expected to include clear and convincing justification to demonstrate the public benefits which the development would realise and the reasons that the harm is necessary, or the reasons that the benefits are considered to outweigh the harm to or loss of significance of the heritage asset. Substantial harm to or loss of assets of the highest significance should be wholly exceptional.
- 6.83 Given the scale and nature of mineral development on greenfield sites, there is significant potential for it to impact on heritage assets with known and unknown archaeological interest, particularly in key areas for early settlement such as the river valleys and terraces typified by the Severn, Avon, Carrant Brook and Salwarpe.⁴⁶² Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments will be considered subject to the policies for designated heritage assets.⁴⁶³

456 For additional guidance see Worcestershire Archive and Archaeology Service (2014) *Information for Agents and Applicants regarding the Historic Environment and Planning* http://www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1064/archaeology_planning_advice, English Heritage (2012) *Mineral Extraction and Archaeology: A Practice Guide* <https://historicengland.org.uk/images-books/publications/mineral-extraction-and-archaeology/> and the Chartered Institute for Archaeologists' standards and guidance documents at <https://www.archaeologists.net/codes/cifa>.

457 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 189.

458 The Historic Environment Record is available through the Worcestershire Archive and Archaeology Service, <http://www.worcestershire.gov.uk/waas>.

459 Worcestershire County Council (2012) *Worcestershire Historic Landscape Characterisation* http://www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1062/historic_landscape_characterisation_hlc.

460 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Conserving and enhancing the historic environment*, paragraph: 013 Reference ID: 18a-013-20140306 Revision date: 06 03 2014.

461 See English Heritage (2012) *Mineral Extraction and Archaeology: A Practice Guide* <https://historicengland.org.uk/images-books/publications/mineral-extraction-and-archaeology/> and the Chartered Institute for Archaeologists' standards and guidance documents at <https://www.archaeologists.net/codes/cifa>.

462 Worcestershire Archive and Archaeology Service (2007) *Archaeology and aggregates in Worcestershire* <http://public.worcestershire.gov.uk/sites/archaeology/Reports/wr10986.pdf>.

463 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, footnote 63.



Anglo-Saxon well, Clifton Quarry

Recording of heritage assets prior to loss

6.84 Where whole or partial loss of heritage assets is justified against part b or c of policy MLP 22,⁴⁶⁴ the technical assessment accompanying the application will be expected to set out how the heritage assets will be recorded, how understanding of the significance of the heritage asset will be advanced, and how the evidence and any archive generated will be made publicly accessible. Proposals for how and when this will take place should be agreed in consultation with Worcestershire Archive and Archaeology service.

6.85 Copies of evidence will be expected to be deposited with the Worcestershire Historic Environment Record, and any archives with a local museum or other public depository, and opportunities for on-site education and interpretation as part of wider public access and green infrastructure enhancement should be considered.

⁴⁶⁴ In accordance with the Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 199, the ability to record evidence of our past will not be a factor in deciding whether such loss should be permitted.

Landscape

Policy MLP 23: Landscape

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect, conserve and enhance the character and distinctiveness of the landscape.

A level of technical assessment appropriate to the proposed development and its potential impact on the landscape will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) optimise opportunities to enhance inherent landscape character, integrating other green infrastructure components where appropriate;
- b) not have an unacceptable adverse effect on the inherent landscape character. The benefits of the proposal will be balanced against the significance of any impacts where the proposed development is likely to:
 - i. result in significant change to the key characteristics of the landscape identified in the Worcestershire Landscape Character Assessment and Worcestershire Historic Landscape Characterisation; or
 - ii. introduce landscape features that conflict with, or dilute, the inherent landscape character of the area; and
- c) not have an unacceptable adverse effect on an Area of Outstanding Natural Beauty, taking into account its special qualities and the provisions of the relevant Management Plan:
 - i. great weight will be given to conserving the landscape and scenic beauty of Areas of Outstanding Natural Beauty and proposals within them will be refused except in exceptional circumstances and where it is demonstrated that the proposed development is in the public interest; and
 - ii. where the proposed development would affect the setting of an Area of Outstanding Natural Beauty, regard will be given to conserving and enhancing the natural beauty of the Area of Outstanding Natural Beauty.

Reasoned justification

6.86 Landscapes evolve over time as a result of natural and cultural processes including changes in patterns of land use, habitat networks and built development. Personal appreciation of the landscape and how individuals and communities relate to or make use of it are also important in defining sense of place and distinctiveness of an area. Landscape character is defined by the variety of features and attributes that are distinctive, recognisable and with consistent

patterns that give localities their sense of place. The key characteristics of landscape types within Worcestershire are set out in the Worcestershire Landscape Character Assessment.⁴⁶⁵ This is supplemented by the Worcestershire Historic Landscape Characterisation⁴⁶⁶ which identifies inherited historic character, its diversity and legibility in the modern landscape. Together these contribute towards the assessment and understanding of significance and value in the landscape.

⁴⁶⁵ The *Worcestershire Landscape Character Assessment Supplementary Guidance* technical handbook and interactive maps are available at www.worcestershire.gov.uk/lca.

⁴⁶⁶ The *Worcestershire Historic Landscape Characterisation* is available at http://www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1062/historic_landscape_characterisation_hlc.

6.87 The scale and nature of mineral development means it can have both temporary and permanent impacts on existing landscapes depending on how sites are worked and restored. Land uses and features such as hedgerows, field boundaries, water bodies and footpaths might be altered and new landforms are likely to be created. Carefully designed mineral development provides the opportunity to repair fragmented landscapes and enhance wider views and landscape character.

Protecting and enhancing inherent landscape character

6.88 The scale of minerals development means that there are likely to be significant opportunities to take a landscape-scale approach to protecting and enhancing inherent landscape character through the working and restoration of sites.

6.89 Policy MLP 23 requires an appropriate level of technical assessment to be submitted with each application. Such assessment should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area, and will need to consider the impacts which might occur at all stages of the site's life. They should:

- Identify and describe the key characteristics of the local landscape. This should be informed by the Worcestershire Landscape Character Assessment and Worcestershire Historic Landscape Characterisation and should include a field evaluation where necessary. It should make reference to the features that define the character of the area and the relative importance of those features, considering the relevant land cover parcel, landscape description unit, landscape type, historic landscape type and regional character area in identifying relevant features and characteristics.⁴⁶⁷
- Assess the role of the site in contributing to the inherent landscape character, taking account of the site's key features, the condition of the landscape and sensitivity to change, and

any cumulative landscape and visual impacts with other existing or proposed development.

- Consider the site in relation to the setting of any settlement(s) and the inherited character of the settlement's setting and views.
- Set out how the design of the site's working and restoration proposals takes account of the key characteristics of the surrounding landscape type, and the measures proposed to ensure the site will fit comfortably within that landscape, in keeping with existing features and habitats. This should draw on the landscape guidelines set out for the relevant landscape type in the Worcestershire Landscape Character Assessment and may include measures such as linking hedges and streams, incorporating appropriate tree cover patterns, and retaining characteristic views.
- Set out the proposed working and restoration options and clearly explain why the submitted proposal was chosen. This should identify any changes which the proposal will cause to the inherent landscape character and how the proposal will integrate the site into the existing landscape. Proposals should quantify the extent of any potential positive and negative effects, individually or cumulatively with existing or proposed development, and should distinguish between temporary and permanent effects from each phase of the proposed development.

6.90 There is significant scope for site design, layout, landforms, planting and screening to protect, restore, enhance and/or create features that strengthen inherent landscape character through all phases of the proposed development, particularly where the integration of other green infrastructure components is considered holistically, as these components influence landscape character. This might include protecting or reinstating historic landscape features, reverting to historic land management practices and field patterns, ensuring waterbodies⁴⁶⁸ are in keeping with the landscape character in terms of their design and scale, and planting using locally appropriate species.

⁴⁶⁷ Landscape Description Units are the building blocks of the Worcestershire *Landscape Character Assessment*. Nesting within them are the smallest units of landscape character, Land Cover Parcels, which describe any local variation that is present and visually apparent within the larger Landscape Description Units. The *Landscape Character Assessment* identifies commonalities in landscapes, allowing Landscape Description Units and the Land Cover Parcels within them to be classified into Landscape Types. These landscape units and types sit together in a mapped hierarchy: Regional Character Areas > Landscape Types > Landscape Description Units > Land Cover Parcels. See www.worcestershire.gov.uk/lca for more information.

⁴⁶⁸ Waterbodies may be permanent or transitory and could include ponds, lakes, reservoirs, ditches, streams, or wetlands.

- 6.91 The technical assessment will be expected to be prepared in line with methods set out in the *Guidelines for Landscape and Visual Impact Assessment*⁴⁶⁹ and to identify opportunities to contribute towards the relevant strategic corridor priorities (see Policies MLP 4 to MLP 8) and outline how these and any site-specific opportunities have influenced working and restoration proposals to optimise the enhancement of the inherent landscape character.
- 6.92 Some level of change may be able to be tolerated or absorbed, and this is likely to differ depending on the characteristics, scale and sensitivity of the landscape affected. A level of change which would fundamentally alter the landscape character so that it would no longer be recognised as containing the indicators, features and characteristics of its original landscape type is unlikely to be acceptable. Where the inherent landscape character would be fundamentally altered, the assessment should robustly justify why the inherent character cannot be conserved, restored or enhanced and why the proposed wholesale landscape change is the most appropriate option. This should include detail of measures taken to avoid or otherwise reduce harm through appropriate mitigation, changes to on-site working, or other enhancement proposals.
- 6.93 Assessments should be proportionate to the nature and scale of development proposed and the likely impact on the landscape. Analysis of the components that make up landscape should be at a scale commensurate with understanding the landscape as a whole. Where appropriate the assessment might form part of an assessment of visual impacts (see policy MLP 19, Amenity).

Protecting designated landscapes

- 6.94 Areas of Outstanding Natural Beauty (AONB) and other designated landscapes are accorded a high status of protection in relation to landscape and scenic beauty, and the conservation of wildlife and cultural heritage are important considerations in these areas.⁴⁷⁰ Both the Malvern Hills AONB and Cotswolds AONB Management Plans recognise that the supply of locally distinctive building materials may be needed to help retain local distinctiveness.⁴⁷¹

- 6.95 Policy MLP 23 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area. They will also need to consider the impacts which might occur at all stages of the site's life. They should:
- Identify whether the proposed development is within or is likely to affect the setting of an AONB. This should include consideration of potential impacts on the AONB from proposals outside the AONB boundary, and should consider the impacts of the development both individually or cumulatively with other existing or proposed development to establish the significance of any effects on the AONB.
 - Proposals within an AONB should demonstrate the exceptional circumstances that exist, and why the proposal is considered to be in the public interest. As a minimum, reference should be made to relevant national policy, the special qualities of the AONB, and the provisions of the appropriate AONB Management Plan.
 - Proposals within the setting of an AONB should describe the impacts on the landscape conservation and scenic beauty of the AONB, including reference to the relevant Management Plans, and any views in to and out of the AONB which would be affected. The assessment should consider when in the life of the mineral site the impacts might happen, as well as their duration.



⁴⁶⁹ Landscape Institute (2013) *Guidelines for Landscape and Visual Impact Assessment (Third edition)*.

⁴⁷⁰ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 172.

⁴⁷¹ Page 55 of the *Malvern Hills Area of Outstanding Natural Beauty Management Plan 2014-2019*, available at <http://www.malvernhillsaonb.org.uk/>, and page 44 of the *Cotswolds Area of Outstanding Natural Beauty Management Plan 2018-2023*, available at <https://www.cotswoldsaonb.org.uk/planning/cotswolds-aonb-management-plan>.

Soils

Policy MLP 24: Soils

Contributing to:

Objectives MO2, MO3, MO5, MO6

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect and conserve soil resources and their quality.

A level of technical assessment appropriate to the proposed development and its potential impacts on soil resources will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) retain all soils within the site; and
- b) make appropriate provision for:
 - i. soil stripping;
 - ii. soil handling;
 - iii. soil storage; and
 - iv. re-use of soils.

Reasoned justification

6.96 Soils are an essential and finite physical resource.⁴⁷² They provide a growing medium for food, timber and other crops, store carbon and water, support biodiversity and act as a buffer against pollution.⁴⁷³ Worcestershire's soils face increasing pressures from climate change, land management practices and development.⁴⁷⁴

6.97 Soils overlie mineral resources and the extraction of minerals can severely disrupt soil ecosystems through the moving and mixing of soils that have developed over hundreds or thousands of years. Soils (including topsoil, subsoil, overburden and soil-making materials) can be lost or degraded by being stripped, handled and stored to enable access to underlying minerals.

6.98 The handling and storage of soils for re-use in landscaping and restoration of mineral workings can also lead to degradation. Compaction of soil reduces water infiltration, creating higher levels of run-off. This can lead to increased flood risk, and reduced agricultural productivity.⁴⁷⁵ Soil compaction, loss of organic matter or soil structure, changes in soil acidity, and gradient can also lead to soil erosion and consequent impacts on water quality. Appropriate soil management can significantly reduce the adverse impact of mineral development on soil functions and quality.

⁴⁷² Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Natural Environment*, paragraph: 024 Reference ID: 8-024-20140306 Revision date: 06 03 2014.

⁴⁷³ Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Natural Environment*, paragraph: 025 Reference ID: 8-025-20140306 Revision date: 06 03 2014.

⁴⁷⁴ Worcestershire County Council (2011) *Planning for soils technical research paper*.

⁴⁷⁵ Defra (2009) *Safeguarding our soils: A strategy for England*



Sand and gravel visible in the soil at Clifton Quarry (before mineral extraction)

6.99 Policy MLP 24 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area. They will also need to consider the impacts which might occur at all stages of the site's life. They should:

- Delineate, quantify and characterise the topsoils and subsoils on site and identify the location and extent of soils contrasting in texture, stoniness, organic matter content, compaction or permeability.
- Set out how the identified topsoils, subsoils, overburden and soil-making materials will be stripped, stored and handled in a manner which

protects soil functions and quality over the life of the site. In accordance with best practice guidance⁴⁷⁶, this should differentiate between activities at each stage of the development and include details of how and where topsoil, subsoil, overburden and soil-making materials will be stored, directly replaced⁴⁷⁷ in another part of the site, and used in restoration schemes.

6.100 Where the importation of soils for site restoration is proposed, this should be strongly justified and should demonstrate that importing soils will not have a significant adverse effect on the quality or conservation of the existing soil resource.

⁴⁷⁶ Including Defra (2009) *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69308/pb13298-code-of-practice-090910.pdf and Maff (2000) *Good Practice Guide for Handling Soils* <http://webarchive.nationalarchives.gov.uk/2009031721756/http://www.defra.gov.uk/farm/environment/land-use/soilguid/index.htm>.

⁴⁷⁷ Restoration of soils to their final location without a period of storage.

Best and most versatile agricultural land

Policy MLP 25: Best and Most Versatile Agricultural Land

Contributing to:

Objectives MO2, MO3, MO5

Planning permission will be granted where it is demonstrated that the proposed mineral development will safeguard the long-term potential of best and most versatile agricultural land.

A level of technical assessment appropriate to the proposed development and its potential impacts on best and most versatile agricultural land will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) prioritise the development of poorer-quality land in preference to higher-quality land, avoiding significant development of best and most versatile agricultural land unless it is demonstrated to be necessary;
- b) safeguard the long-term potential of best and most versatile agricultural land by enabling the land to retain its longer-term capability for agricultural use where practicable, though the proposed after-use need not always be for agriculture; and
- c) optimise the restoration of agricultural land quality and integration of green infrastructure components, where the proposed after-use includes agriculture.

Reasoned justification

- 6.101 Worcestershire has a strong agricultural sector, although land quality varies throughout the county. Most mineral development involves development of agricultural land, but the Agricultural Land Classification⁴⁷⁸ 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 agricultural land' defined as grades 1, 2 and 3a.⁴⁷⁹
- 6.102 Mineral development can impact on best and most versatile agricultural land by altering the principal physical factors which influence agricultural production, including climatic factors such as exposure, aspect and frost risk, site factors including gradient, microrelief and flood risk, and soil characteristics such as texture, structure, depth and stoniness.⁴⁸⁰

Avoiding significant development of best and most versatile agricultural land

- 6.103 Policy MLP 25 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area. They will also need to consider the impacts which might occur at all stages of the site's life. They should:
- Include an assessment of the quality of agricultural land across the entire application site. The Agricultural Land Classification should be used as a starting point⁴⁸¹ but developers may also need to undertake more detailed assessments, particularly where existing information does not distinguish between grade 3a and grade 3b land.

478 Natural England Technical Information Note TIN049 (2012) *Agricultural Land Classification: protecting the best and most versatile agricultural land*.

479 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, Annex 2: Glossary

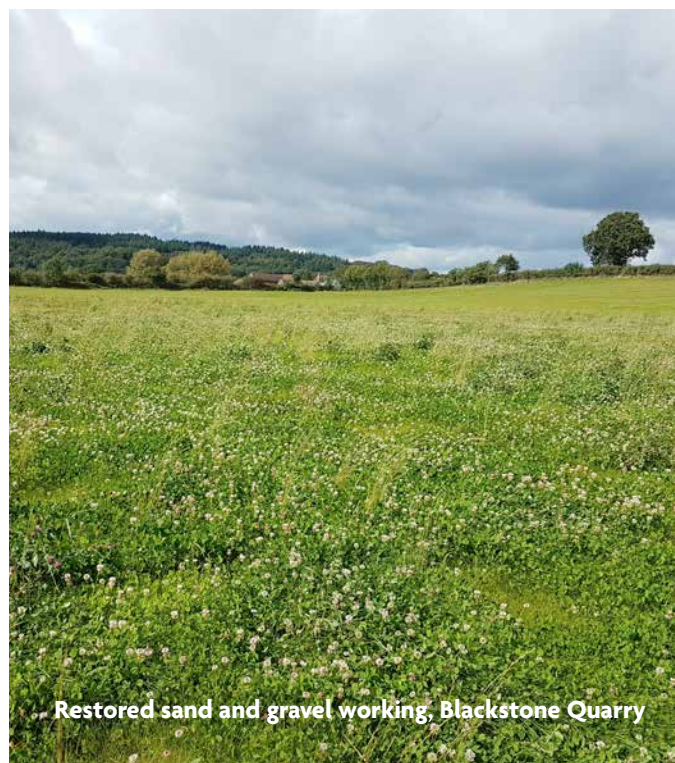
480 Natural England Technical Information Note TIN049 (2012) *Agricultural Land Classification: protecting the best and most versatile agricultural land*.

481 See Natural England guidance on agricultural land and assessing proposals for development at <https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development>.

- Demonstrate how the proposed site design and working methods will ensure that areas of lower-quality land will be used in preference to areas of higher-quality land, and how significant development of best and most versatile agricultural land will be avoided.
- Where significant development of best and most versatile agricultural land is proposed, set out clear justification of why this is necessary and why the need for the development outweighs the adverse impact upon agricultural land quality. Justification may include environmental, social or economic constraints affecting alternative land of lower agricultural quality which outweigh the adverse impact of significant development of best and most versatile agricultural land.

Considering agricultural land quality and green infrastructure in restoration and after-use

- 6.104 It is not always necessary for high-quality land to be restored to agricultural use. The technical assessment required by policy MLP 25 should be undertaken by an appropriate and competent expert and should set out how working and restoration schemes have been designed to address the climatic factors, site factors and soil characteristics which could limit the agricultural land quality of the restored site where agriculture is proposed,⁴⁸² or the longer-term capability of the land to return to agricultural use in the future where the proposed after-use does not include agriculture.
- 6.105 Where the proposed restoration and after-use includes agriculture, optimising the restoration of agricultural land quality could include preserving high-quality soils in situ, the creation of landforms and final soil placement that reinstates high-quality land to its original value across the site, or concentrating delivery of high-quality agricultural land in part of the site.



Restored sand and gravel working, Blackstone Quarry

- 6.106 Integrating green infrastructure could assist with reinstating high-quality land or retaining its longer-term capability for food production by maximising its role in providing ecosystem services, and consideration should be given to the priorities of the relevant strategic corridor (see policies MLP 4 to MLP 8). Measures such as reinstating characteristic field patterns, field boundaries and margin treatments, and land management that is compatible with Biodiversity Action Plan priority habitats and landscape character (such as commercial livestock grazing of lowland meadows or acid grasslands, or seasonal grazing of water meadows) are likely to benefit both agriculture and green infrastructure. Physical and natural features to aid water storage, reduce run-off or improve water quality can also deliver additional benefits for agriculture by reducing soil erosion, reducing diffuse pollution and increasing water availability.

⁴⁸² See Natural England guidance on reclaiming minerals extraction and landfill sites to agriculture at <https://www.gov.uk/government/publications/reclaim-minerals-extraction-and-landfill-sites-to-agriculture>.

Geodiversity

Policy MLP 26: Geodiversity

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect, conserve and enhance geodiversity.

A level of technical assessment appropriate to the proposed development and its potential impacts on geological conservation interests will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) optimise opportunities to improve the condition, legibility and understanding of geodiversity, integrating other green infrastructure components where appropriate;
- b) not cause unacceptable adverse effects on geological or geomorphological sites or features. Protection will be commensurate with the status of the features and will give appropriate weight to their importance:
 - i. development proposals likely to have an adverse effect on any Sites of Special Scientific Interest (SSSI) or their notified special interest features will not be permitted unless the benefits of the proposed development clearly outweigh both its likely impacts on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
 - ii. development proposals likely to give rise to the loss or deterioration of Local Geological Sites will only be permitted where it is demonstrated that the benefits of the development outweigh the loss or harm; and
 - iii. where the proposed development is likely to expose features of geological conservation interest, the benefits of exposing such features will be balanced against the scale and significance of any harm to or loss of such features; and
- c) where loss is unavoidable, record and advance understanding of the significance of any geodiversity feature(s) to be lost (wholly or in part) in a manner proportionate to their importance and the impact of the loss, and make evidence and any archive generated publicly accessible.

Reasoned justification

6.107 Geodiversity is the range of rocks, minerals, fossils, geological structures, soils and landforms that shape our natural environment and landscapes and the way we use them. Many geological or geomorphological features are of scientific interest or have a cultural value, contributing to local character and distinctiveness, and therefore these geological conservation interests should be valued and protected. Mineral workings have the potential to both reveal previously unexposed features of geological interest and destroy existing features.

Enhancing geodiversity

- 6.108 Mineral sites offer opportunities to enhance scientific and cultural understanding of geodiversity by revealing, recording or retaining features of geological conservation interest.
- 6.109 Policy MLP 26 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will be expected to identify opportunities to contribute towards the relevant strategic corridor priorities (see Policies MLP 4 to MLP 8) and to outline how these and any site-specific opportunities have influenced working and restoration proposals to optimise delivery of improvements to the condition, legibility and understanding of geodiversity.

6.110 Improvements for geodiversity could be delivered through improving the condition of features preserved in situ; through the exposure of new features, particularly where they will deliver the objectives of the UK Geodiversity Action Plan⁴⁸³ and Worcestershire Geodiversity Action Plans⁴⁸⁴; or facilitating access to the site to enable further understanding, where this is a safe and appropriate option. Considering the relationship of the geological conditions and features at the site within the wider environmental and cultural context can also provide significant opportunities to contribute towards multifunctional green infrastructure enhancements.

6.111 Opportunities to improve legibility and understanding of geodiversity are likely to be significant in the Abberley and Malvern Hills Geopark, but opportunities for enhancement are not limited to this area. Any sites within the river terraces of the Severn and Avon have the potential to reveal and record important information about the internationally important river terrace system, and the river patterns and environments in which the terraces were formed.

Protection of important geological or geomorphological features

6.112 Policy MLP 26 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert, will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area, and will need to consider the impacts which might occur at all stages of the site's life. They should:

- Identify any features of geological conservation interest, making reference to notified features of any Sites of Special Scientific Interest and the qualifying criteria for which any Local Geological Sites have been designated.
- Assess the likelihood for features to be exposed during each phase of the development that could be of scientific or educational value, historic significance and/or aesthetic interest.
- Assess if the proposal, either individually or cumulatively with other existing or proposed development, is likely to:
 - cause adverse effects on any Site(s) of Special Scientific Interest, including

reference to the particular SSSI as well as any broader impacts on the national network of Sites of Special Scientific Interest;

- give rise to the loss or deterioration of any Local Geological Site(s); or
- result in loss of a feature of geological conservation interest exposed during the working of the site.

This should include details of measures that will be taken to avoid or otherwise reduce harm through appropriate mitigation, changes to on-site working, or any enhancement proposals. Mitigation measures might include stand-off zones to protect vulnerable features or the replacement of destroyed exposures with features of equal or better quality and interest at another part of the site.

- Where the proposed development is likely to have an adverse effect on a Site of Special Scientific Interest, its notified features, or the national network of Sites of Special Scientific Interest, or where it is likely to result in the loss or deterioration of a Local Geological Site, clear justification should be included to demonstrate why the benefits of the proposed development outweigh the impacts.

6.113 The level of detail should be proportionate to the nature and scale of development proposed and the feature's importance.

Recording geodiversity features prior to loss

6.114 Where the technical assessment shows that there will be unavoidable loss or deterioration of features of geological conservation interest, the scientific or educational value, historic significance and/or aesthetic qualities of the features should be recorded. This is likely to require periodic access to enable extraction faces to be logged and recorded by an appropriate and competent expert. The technical assessment will be expected to set out how the assets or features will be recorded, and how the evidence and any archive generated will be made publicly accessible.

6.115 Proposals for how and when recording and dissemination will take place should be agreed in consultation with the Herefordshire and Worcestershire Earth Heritage Trust's Geological Records Centre, or other appropriate body. On-site education and interpretation as part of wider public access and green infrastructure enhancement should be considered.

483 <http://www.ukgap.org.uk/>.

484 <http://www.earthheritagetrust.org/pub/local-gaps/the-local-geodiversity-action-plans/>.

Water quality and quantity

Policy MLP 27: Water Quality and Quantity

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will protect and enhance the quality, quantity and flow of surface water and groundwater resources.

A level of technical assessment appropriate to the proposed development and its potential impacts on the water environment will be required to demonstrate that, throughout its lifetime, the proposed development:

- a) optimises opportunities to enhance surface water and groundwater resources, integrating other green infrastructure components where appropriate; and
- b) will not have an unacceptable adverse effect on the quality, quantity or flow of ground or surface water.

Reasoned justification

6.116 A sustainable water environment is essential to people, the economy and the environment. The water environment encompasses ground and surface water resources, including aquifers, ordinary watercourses, and main rivers. As well as providing habitats for aquatic life, clean and plentiful water is crucial to our quality of life, from household consumption to industrial and agricultural uses. The benefits of a healthy and well-functioning water environment can be put at risk from poor water quality and changes to water availability, which could be exacerbated by climate change.

6.117 The water environment on an individual site will be influenced by its surroundings. The existing and potential hydrological linkages between a site and the catchment within which it is located should influence the design of sites, how they are worked, and how they should be restored. Minerals development must be carefully designed and managed to minimise harm to water resources and, wherever possible, deliver benefits to the water environment.

6.118 Water quality refers to the chemical, physical and ecological characteristics of water, generally focusing on the health of people and ecosystems. Water quality can be significantly affected by changes to the water environment (such as water levels, flows, and pathways) or external changes

(such as the introduction of new point or diffuse pollution sources).

6.119 The quantity and natural flow of water can directly affect its quality, and can have profound effects on people and environments, including biodiversity, and all kinds of users who rely on adequate water supplies. Abstraction and dewatering associated with minerals development can affect groundwater flows, including through the draining or diverting of aquifers, or the interconnection of separate aquifers. Abstraction and dewatering can also affect watercourses whose base flows derive from groundwater, or where water is abstracted from or discharged to watercourses.

Enhancing water resources

6.120 The scale and location of mineral development and the proposed after-use will influence the potential contribution that a mineral site can make to the enhancement of the water environment. By proactively designing and delivering integrated green infrastructure, mineral working and restoration has substantial potential to enhance the water environment alongside delivering other priorities. Mineral workings and restored sites may be able to implement natural water retention measures to assist with infiltration and groundwater recharge, managing water levels in surface waterbodies, and preventing soil erosion and consequent impacts on water quality.⁴⁸⁵

⁴⁸⁵ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

6.121 Policy MLP 27 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will be expected to identify opportunities to contribute towards the relevant strategic corridor priorities (see Policies MLP 4 to MLP 8) and to outline how these and any site-specific opportunities have influenced working and restoration proposals to optimise delivery of enhancements for the quality and quantity of surface and ground water at a local and a catchment scale.

Protecting water quality and quantity

6.122 Policy MLP 27 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area. They will also need to consider the impacts which might occur at all stages of the site's life. They should:

- identify the type, location, and status⁴⁸⁶ of any water features within the development site and its surroundings;
- set out how the proposed development, both individually and cumulatively with other existing or proposed development, will affect the quality, water levels and flows of these water features, including through abstraction, dewatering, and discharge, as well as any changes to topography, geology or vegetation which could influence infiltration or attenuation rates, or alter surface or groundwater flow pathways;
- identify any pathways that could lead to pollution of groundwater and/or surface water by chemicals or other contaminants, clearly setting out the measures which will be incorporated to ensure that any potential pollutants will be controlled through appropriate storage or remediation;
- identify the measures that would be put in place to avoid or mitigate any other harm to the water environment, and how any enhancement will be secured, this should include consideration of multifunctional green infrastructure solutions; and

- identify the significance of any residual effects that cannot be avoided or mitigated.

6.123 The significance of any impacts is likely to be influenced by the condition and status of the existing water environment, and technical assessments should outline how the proposed development has taken this into account. For example, parts of the county are designated as Source Protection Zones where there is increased risk of ground water pollution from changes in land use, or Nitrate Vulnerable Zones where there is a significant risk of either surface or ground water pollution from agricultural nitrate use. Such designations may influence how the site can be worked, whether dewatering is appropriate, and the type of restoration which is appropriate. The Water Framework Directive status of any watercourses will also need to be considered, and technical assessments will be expected to show how the proposed development will ensure that it will not lead to any deterioration in Water Framework Directive status.⁴⁸⁷ Applicants are encouraged to seek advice from the Environment Agency at an early stage in developing proposals.

6.124 Where abstraction or dewatering is proposed, a Hydrogeological Impact Assessment is likely to be necessary and should be undertaken in accordance with the Environment Agency's guidance.⁴⁸⁸ Drainage during site operations and any discharge to local watercourses must be controlled to comply with Environment Agency standards.



486 Including Water Framework Directive status if available, Nitrate Vulnerable Zones, Source Protection Zones, or any other measure of condition/risk, including restrictions on abstraction.

487 Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

488 Environment Agency (2007) *Hydrogeological impact appraisal for dewatering abstractions*.

Flooding

Policy MLP 28: Flooding

Contributing to:

Objectives MO2, MO3, MO4, MO5

Planning permission will be granted where it is demonstrated that the proposed mineral development will avoid increasing flood risk to people and property on site or elsewhere and contribute to a reduction in overall flood risk.

A level of technical assessment appropriate to the proposed development and its potential impacts on flood risk, taking account of climate change, will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) optimise opportunities to reduce the causes and impacts of flooding, integrating other green infrastructure components where appropriate;
- b) incorporate appropriate sustainable drainage systems;
- c) be resilient to flooding;
- d) be safe for its users; and
- e) not increase flood risk elsewhere.

Reasoned justification

6.125 Flooding can occur from watercourses, surface water, ground water or sewers. It is not simply the result of rainfall but is influenced by landform and land management. Impermeable ground has less ability to store and slow water than permeable ground, and vegetation can increase infiltration and interception of rain and slow the velocity of water entering rivers. Worcestershire has been subject to severe flooding events in recent years, with different parts of the county being affected by different types of flooding. Effective flood risk management is central to the economic prosperity of Worcestershire as a place for people to live, work and visit.

6.126 Sand and gravel working is classed as “water compatible development”, meaning that it can be appropriate in all flood zones. Other mineral working and processing is classed as “less vulnerable”, meaning that it can be appropriate in flood zones 1, 2 and 3a. However, flood risk management needs to be considered to ensure that the development will be safe for its lifetime without increasing flood risk elsewhere, and that opportunities to reduce the causes and impacts of

flooding are fully considered. Minerals development must be appropriately flood resilient and resistant, safe for its users over its lifetime, and not increase flood risk overall. Mineral development also offers an opportunity to contribute to overall flood risk betterment, particularly within the catchment in which it is located.

Optimising flood betterment

6.127 The scale and location of mineral development and the proposed after-use will influence the potential contribution that a mineral site can make to reducing the causes and impacts of flooding. By proactively designing and delivering integrated green infrastructure and incorporating sustainable drainage systems and natural flood management techniques, mineral working and restoration has substantial potential to reduce the causes and impacts of flooding alongside delivering other priorities.⁴⁸⁹ Mineral workings and restored sites may be able to help to reduce flood risk within and beyond the site boundary by increasing flood storage or floodplain connectivity, or controlling and attenuating run-off, depending on the topography of the site and its relationship with the catchment⁴⁹⁰.

⁴⁸⁹ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

⁴⁹⁰ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

6.128 Policy MLP 28 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and should set out a strategy for reducing the causes and impacts of flooding throughout the life of the site as an integrated part of multifunctional green infrastructure. Assessments will be expected to identify opportunities to contribute towards the relevant strategic corridor priorities (see Policies MLP 4 to MLP 8) and to outline how these and any site-specific opportunities have influenced working and restoration proposals to optimise delivery of measures which will reduce the causes and impacts of flooding.

Flood risk and resilience

6.129 Policy MLP 28 requires an appropriate level of technical assessment to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works, such as access routes, in addition to the main working area. They will also need to consider the impacts which might occur at all stages of the site's life, taking account of climate change.⁴⁹¹ They should:

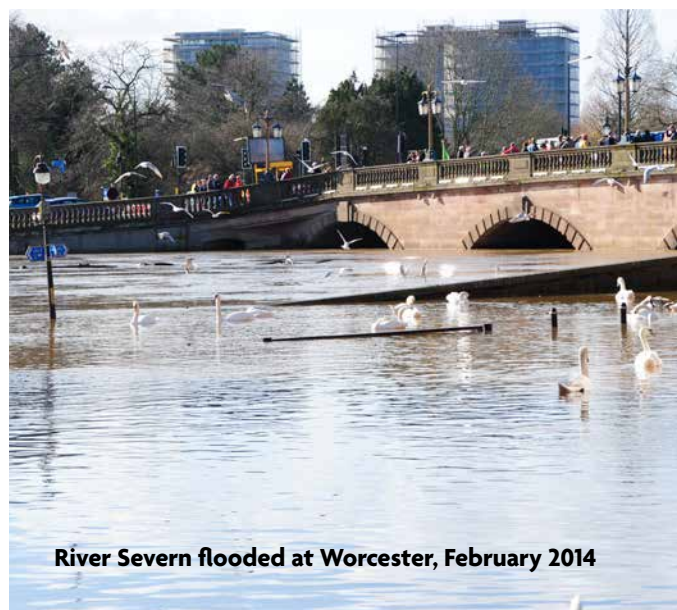
- establish current and future levels of flood risk from all sources⁴⁹², both on site and surrounding the site, where flooding could affect or be affected by the development;
- identify and quantify how the proposed development, individually or cumulatively with other existing or proposed development, would affect on-site and off-site flood risk;
- provide details of the sustainable drainage systems which will be incorporated and the minimum operational standards and maintenance arrangements for these systems over the lifetime of the site;
- provide details of how the site and its surroundings will be made safe and resilient to flooding without increasing flood risk elsewhere; and
- identify the location, extent, and significance of any residual flood risk.

- A site-specific Flood Risk Assessment will be required where sites are in areas at risk of flooding, or are greater than 1 hectare in area.⁴⁹³ The technical assessment should satisfy the relevant sequential and exception tests if required.⁴⁹⁴

6.130 Although minerals working and processing is classed as either “water compatible” or “less vulnerable” development, it should still take place in areas with the lowest probability of flooding unless there are no reasonably available sites in lower-risk flood zones. Proposals should be designed to avoid locating more vulnerable parts of a mineral development, such as processing plant and associated buildings, within higher-risk parts of the site.

6.131 Sites should be designed to ensure that materials are stored in a way that prevents them being washed away during flood events, and safe access for vehicles and pedestrians should also be considered.

6.132 Minerals working, restoration and after-use strategies should be informed by local and national evidence and policy.⁴⁹⁵ Applicants are encouraged to seek advice from the Environment Agency, the Lead Local Flood Authority (Worcestershire County Council), and the Internal Drainage Board at an early stage in developing proposals.



River Severn flooded at Worcester, February 2014

⁴⁹¹ The implications of climate change and the allowances that should be made for climate change adaptation should be informed by the most up-to-date Environment Agency advice.

⁴⁹² This should be informed by the Environment Agency's online flood maps, the Worcestershire County Council's and District Councils' Strategic Flood Risk Assessments, the *Worcestershire Surface Water Management Plan* (June 2018) available at http://www.worcestershire.gov.uk/info/20236/flood_risk_management/1046/plans_policies_and_strategies, (once published), and the Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*, available at www.worcestershire.gov.uk/mineralsbackground.

⁴⁹³ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 163.

⁴⁹⁴ In accordance with Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraphs 155-165, and *Planning Practice Guidance, Flood risk and coastal change*.

⁴⁹⁵ An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan.

Transport

Policy MLP 29: Transport

Contributing to:

Objectives MO2, MO3, MO4, MO5

Planning permission will be granted for mineral development that uses the most sustainable transport options and which will not have an unacceptable adverse effect on transport safety or congestion.

A level of technical assessment appropriate to the proposed development and its potential impacts on the local and strategic transport network will be required to demonstrate that, throughout its lifetime, the proposed development will:

- a) prioritise the use of alternatives to road transport for the movement of minerals and materials (including water, rail, conveyors and pipelines). Road transport of minerals and materials will only be acceptable where it is demonstrated that alternative modes are not practicable or are not environmentally preferable;
- b) provide safe and convenient access for employees and visitors which optimises the use of public transport, walking and cycling;
- c) connect to the strategic transport network without having an unacceptable adverse effect on safety or congestion of the local or strategic transport network;
- d) not have an unacceptable adverse effect on the environment or amenity along transport routes; and
- e) where new or modified routes are required, optimise opportunities to create and integrate green infrastructure.

Reasoned justification

6.133 Policy MLP 29 is applicable to all transport movements to, from, and within all types of mineral sites, whether active or restored quarries, or processing locations. Transport includes employees' and visitors' vehicle movements and movements of minerals or other materials to or from the site. Transport of minerals, materials and people has the potential to affect the environment and public safety and to cause inconvenience, noise, vibration and air pollution. In some cases, use of rail, waterways, conveyors or pipelines may reduce these impacts

in comparison to road transport and, as such, it may be preferable to transport minerals a longer distance by rail or water than a shorter distance by road. Incorporating sustainable transport for employees and visitors can also help to reduce these impacts and can help to support healthy lifestyles.

6.134 The strategic transport network comprises navigable waterways, strategic rail routes and the strategic highway network⁴⁹⁶ (see Figure 2.10 in Chapter 2). Routes within this network are the most appropriate for the movement of minerals and materials to local and national markets.

⁴⁹⁶ The *Advisory Lorry Route Map for Worcestershire* indicates the best available routes for heavy goods vehicles in Worcestershire, encouraging use of routes which avoid environmentally sensitive areas and bridges where the safe clearance is restricted and minimise conflict with local residents and impacts on Air Quality Management Areas (AQMAs). The *Advisory Lorry Route Map for Worcestershire* is available at http://www.worcestershire.gov.uk/info/20007/travel_and_roads/1003/freight/3.



Addressing transport implications of mineral development

6.135 Policy MLP 29 requires an appropriate level of technical assessment of the site's transport connectivity to be submitted with each application. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of enabling and ancillary works in addition to the main working area. They will also need to consider the impacts which might occur at all stages of the site's life. They should:

- Identify the mode(s) and route(s) to be used to connect the site to the strategic transport network. This should set out the alternatives to road transport which have been considered and any physical, amenity, safety or capacity constraints which have informed the proposal. Where road transport is proposed, this should be fully justified.
- Identify the number and type of vehicle movements to and from the site over the lifetime of the development. This should consider any variations between different phases of the development, including transport of minerals or materials removed from site, transport of any minerals or materials brought to site, and the movement of employees and visitors
- Identify any measures required to enable a safe and suitable connection to the strategic transport network and, where necessary, to the local transport network. This might include physical alterations to the route or new infrastructure which may need to be secured through legal agreements.
- Identify the likely environmental and amenity impacts⁴⁹⁷ of the proposed routes, taking account of any cumulative effects from other existing or proposed development, and set out any mitigation required to avoid or reduce harm. The assessment should determine whether any residual effects are likely to be significant.
- Set out how the proposal optimises access to and from the site by public transport, walking and cycling. A Travel Plan may be required to identify and manage the daily employee and visitor movements to and from the site at different stages of the development.
- Identify how on-site infrastructure will be incorporated to enable sustainable transport, such as appropriately surfaced and lit cycleways, shower/changing facilities, secure cycle storage, and charging facilities for electric vehicles.
- Identify the green infrastructure opportunities that will be created or integrated along any new or modified routes, informed by the relevant strategic corridor priorities.

⁴⁹⁷ This should be considered in conjunction with policy MLP 19 (Amenity).



- 6.136 All development that will generate significant transport movements should have a Travel Plan which is supported by a Transport Statement or Transport Assessment.⁴⁹⁸ This should set out any differing requirements throughout the site's operational life, restoration and aftercare, and after-use. A proportionate approach will be taken to the need for Transport Statements, Transport Assessments, and Travel Plans, depending on the potential impact of the proposal.
- 6.137 Early engagement with route owners and/or operators can provide important information to applicants on the opportunities and limitations of any proposals, and can ensure that the connections identified in the assessment are realistic.
- 6.138 Taking an integrated approach to design from the outset could lead to the early identification of features or site infrastructure that might be retained in the after-use of the site to promote public access and/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. There may also be scope to provide other green infrastructure elements from the outset, such as sustainable drainage and planting schemes around visibility splays where compatible with safety requirements.

⁴⁹⁸ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 111.

Planning obligations

Policy MLP 30: Planning Obligations

Contributing to:

Objectives MO1, MO2, MO3, MO4, MO5, MO6

Measures necessary to make the proposed development acceptable will be secured through planning conditions and/or planning obligations.

- a) Planning conditions will be used where necessary to enhance the quality of development and mitigate adverse effects, enabling development to proceed where it would otherwise be necessary to refuse planning permission; and
- b) Planning obligations will only be required where it is not possible to address unacceptable effects of the development through planning conditions and where they are:
 - i. necessary to make the development acceptable in planning terms;
 - ii. directly related to the development; and
 - iii. fairly and reasonably related in scale and kind to the development.

Planning obligations may commit the developer to either delivering the agreed provision directly or to making suitable financial contributions to its delivery. Bonds or other financial guarantees to underpin planning conditions will only be sought in exceptional circumstances.

Reasoned justification

6.139 Sustainable minerals development requires all potential impacts and opportunities to be understood and addressed, from the start of operations, through the life of the quarry, to restoration and after-use. Measures necessary to make a proposed development acceptable may be identified through the technical assessments required by any of the policies in the Minerals Local Plan, or through consultee comments at planning application stage. It may be necessary to use a combination of planning conditions and planning obligations to secure these measures and ensure a proposed development is acceptable. Where issues can be addressed equally well by imposing a planning condition or entering in to a planning obligation, the Mineral Planning Authority will seek to use planning conditions in the first instance.⁴⁹⁹

6.140 To address any unacceptable effects and secure any enhancements, 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. This may include recording and/or preserving important features in the built, historic and natural environment, and schemes for their future management. If monitoring indicates that action is needed, the developer will be expected to undertake any measures and/or remedial actions reasonably required to avoid unacceptable effects.

6.141 Mineral development may also affect the operation of existing infrastructure and/or require the provision of additional/enhanced infrastructure. Developers will be expected to provide for all works necessary to make the development acceptable.



Restored sand and gravel working at Retreat Farm, near Grimley

6.142 In many cases it will take time for restoration schemes to become fully established and functional. This is particularly the case for new or restored habitats, water features, and landscapes. As such, to ensure that land is brought to the appropriate standard to enable the intended after-use of the site, longer-term aftercare periods beyond the statutory five years may be required, which would be secured with the agreement of the minerals operator.

6.143 The combined total impact of proposed obligations will be carefully considered to ensure it does not threaten the viability of the development. Where developers consider the obligation(s) to threaten viability, they may put forward evidence to demonstrate this. Where an applicant is able to demonstrate to the satisfaction of the Mineral Planning Authority that the planning obligation would cause the development to be unviable, the Mineral Planning Authority will be flexible in seeking planning obligations.

6.144 It will usually be possible to secure high-quality restoration and aftercare through planning conditions. However, the use of financial guarantees, secured through a planning obligation or voluntary agreement at the time planning permission is granted, may be necessary in exceptional circumstances to ensure that agreed restoration schemes can still be delivered even in the event of mineral operators becoming insolvent. Financial guarantees will only be sought in exceptional circumstances⁵⁰⁰, which may include large-scale and very long-term projects that do not involve progressive restoration for practical reasons; more innovative restoration schemes; and/or where there is reliable evidence of the likelihood of either financial or technical failure but this is not sufficient to justify refusal of planning permission. Where an operator is able to show membership of and is contributing to an established mutual funding scheme to support mineral restoration, a financial guarantee through a planning obligation or voluntary agreement should not be necessary.

500 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 205(e).



Croft Farm Water Park, Bredon's Hardwick
(former sand and gravel working)

7. Safeguarding mineral resources and supporting infrastructure (strategic policies)

Introduction

- 7.1 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 sterilisation by other development.⁵⁰¹
- 7.2 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 mineral resources or redeveloping infrastructure sites for other uses; or
 - **indirectly:** for example through the introduction of sensitive land uses in close proximity to these resources or sites.
- 7.3 Even development with temporary structures and minimal groundworks can have a significant impact on mineral safeguarding if there is a change in permitted land use.
- 7.4 Mineral safeguarding is not about preventing development, but about planning ahead.

Discussing safeguarding requirements and implications at pre-application stage allows the greatest scope for the effective consideration of potential impacts on mineral resources and infrastructure, and can help to ensure that non-minerals developments are appropriately located and designed. Mineral safeguarding 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 as Mineral Safeguarding Areas will be worked during the lifetime of the Minerals Local Plan.

Development exempt from mineral safeguarding requirements

- 7.5 Certain types of development are unlikely to cause needless sterilisation. To avoid creating an unnecessary barrier to those developments, the types of development listed in Table 7.1. Types of development exempt from mineral safeguarding requirements are exempt from policies MLP 31 and MLP 32 and will not need to consider safeguarding requirements. Local Planning Authorities will be expected to consult the Mineral Planning Authority on all other types of development. There may be some cases where the impact of a development is considered by the Mineral Planning Authority to be *de minimis*. The Mineral Planning Authority will advise the Local Planning Authority where this is the case.

501 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 204(c-e) and Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals* (Revision date: 17 10 2014).

Table 7.1. Types of development exempt from mineral safeguarding requirements

Type of Development	Reason for exemption
a) Sites allocated in adopted Local Plans, where: <ul style="list-style-type: none"> i. safeguarding requirements have been ruled out during plan preparation and this is clearly stated as part of the site allocation, or ii. a mineral site or supporting infrastructure site has been permitted within 250m of land which has already been allocated in an adopted Local Plan 	Mineral safeguarding considerations will have been raised through the Duty to Cooperate during the development of the Local Plans and Neighbourhood Plans, and the need for safeguarding mineral resources and/or supporting infrastructure will have been addressed through the site allocation process. Some allocated sites may have had safeguarding requirements ruled out during plan preparation; this will need to be clearly stated as part of the site allocation and the site will be exempt from safeguarding.
b) Sites allocated in Neighbourhood Development Plans, where: <ul style="list-style-type: none"> i. safeguarding requirements have been ruled out during plan preparation and this is clearly states as part of the site allocation, or ii. a mineral site or supporting infrastructure site has been permitted within 250m of land which has already been allocated in a Neighbourhood Plan 	Sites allocations which do not make reference to safeguarding, or where requirements for safeguarding mineral resources and/or supporting infrastructure are outlined, will not be exempt. In cases where a mineral site or supporting infrastructure site is permitted after land is allocated in an adopted Local Plan or Neighbourhood Development Plan, the safeguarding requirement of policy MLP 32 will not apply to planning applications for the allocated land use, as the development of the supporting infrastructure site will be considered to be the 'agent of change' in accordance with national policy ⁴⁸¹ and will be expected to provide any suitable mitigation to prevent significant adverse effects on the allocated land use.
c) Replacement of existing buildings with buildings of similar scale and within the same Use Class d) Alterations or extensions to existing buildings where this is within their existing curtilage e) Provision of driveways, garages, car parks, hard standings and non-habitable structures within the curtilage of existing buildings	These types of development are very unlikely to increase the risk of sterilising a mineral resource or supporting infrastructure.
f) Proposals for work to trees or removal of hedgerows	
g) Applications for advertisement consent	
h) Demolition of buildings	Demolition of a building is very unlikely to increase the risk of sterilising a mineral resource or supporting infrastructure, although any associated redevelopment may need to consider safeguarding requirements.
i) Applications for Listed Building Consent	Any development of a Listed Building significant enough to increase the risk of sterilising a mineral resource or supporting infrastructure would be accompanied by a separate planning application which may trigger the need to consider mineral safeguarding requirements.
j) Prior notifications	
k) 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.
l) Certificates of Lawfulness of Proposed Use of Development (CLOPUD)	

502 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 182.503 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: 41 Updated: 19 05 2016.

Safeguarding locally and nationally important mineral resources

Policy MLP 31: Safeguarding Locally and Nationally Important Mineral Resources

Contributing to:

Objectives MO1, MO5, MO6

The locally and nationally important mineral resources identified in Mineral Safeguarding Areas* will be safeguarded against sterilisation by non-mineral development.

A level of technical assessment appropriate to the proposed development and its potential impact on sterilising mineral resources, both within and beyond the boundary of the proposed development, will be required for all non-exempt development** proposed within or partially within the identified Mineral Consultation Areas*** in order to demonstrate:

- a) how much of the mineral resource the proposed development would sterilise;
- b) the potential economic value of the mineral resource in terms of its type, depth, quality and extent and its potential for use in relation to standard specifications; and
- c) how opportunities for extraction of the mineral resource would be optimised either in advance of development taking place or in phases alongside the development, taking the following sequential approach:
 - i. extracting all of the resource within the proposed development site and in the area which would potentially be sterilised by the development; or
 - ii. where extracting all of the resource is not possible or would prevent a suitable landform for subsequent development, extracting a proportion of the resource which would potentially be sterilised by the development; or
 - iii. as a last resort, if neither i or ii above is possible, undertaking incidental recovery to utilise a portion of the mineral resource as an integral part of the groundworks for the non-mineral development.

Where the Local Planning Authority, having consulted the Mineral Planning Authority, considers the economic value of the mineral resource to outweigh the merits of the proposed non-mineral development, or the extraction of the mineral resource proposed under part c is not considered sufficient, the proposed non-mineral development will be refused.

* Mineral Safeguarding Areas are defined on the Policies Map.

** All types of development other than those identified as exempt in Table 7.1 are considered to be non-exempt development.

*** Mineral Consultation Areas are defined on the Policies Map. Notice has been given in writing to the Local Planning Authorities by the County Planning Authority that the Mineral Consultation Areas are areas in which development is likely to affect or be affected by the winning and working of minerals, other than coal, and are subject to the provisions of Schedule 1 para. 7 of the Town and Country Planning Act 1990.

Reasoned justification

Worcestershire's locally and nationally important mineral resources

7.6 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 addressing mineral sterilisation and safeguarding requirements unless there is a reasonable likelihood that the nearby mineral resources are of local or national importance.⁵⁰⁴

7.7 The Minerals Local Plan designates:

- **Mineral Safeguarding Areas** in order to identify the mineral resources of local and national importance which should be safeguarded from sterilisation by non-mineral development.
- **Mineral Consultation Areas** in order to ensure consultation between the relevant Local Planning Authority and the Mineral Planning Authority before non-mineral planning applications are determined to ensure that mineral resources of local and national importance within designated Mineral Safeguarding Areas are not sterilised by non-mineral development where this should be avoided.⁵⁰⁵

7.8 The following mineral resources have been identified as the locally and nationally important mineral resources in Worcestershire which need to be safeguarded:

- terrace and glacial sand and gravel resources,⁵⁰⁶
- solid sand resources,⁵⁰⁷
- crushed rock resources,⁵⁰⁸
- an area of Mercia Mudstone Group brick clay close to the Hartlebury and Waresley brickworks,⁵⁰⁹ and
- former building stone quarries.⁵¹⁰

7.9 These locally and nationally important mineral resources have been designated as Mineral Safeguarding Areas on the Policies Map⁵¹¹ and are shown in Figure 7.1. Mineral Safeguarding Areas and Mineral Consultation Areas. This includes resources which fall outside the strategic corridors, as they could be valuable resources for the future even though they are not the preferred resources to be worked over the life of this Minerals Local Plan.

7.10 It is important that development within Mineral 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 7.2. The sterilisation of near surface mineral resource by surface development.

504 Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework* defines mineral resources 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, fluor spar, shallow and deep-mined coal, oil and gas (including conventional and unconventional hydrocarbons), tungsten, kaolin, ball clay, potash, polyhalite and local minerals of importance to heritage assets and local distinctiveness." Not all of these resources occur in Worcestershire.

505 Schedule 1 para. 7 of the *Town and Country Planning Act 1990* requires the local planning authority to consult the county planning authority before it can determine an application for planning permission or permission in principle for a development in an area in relation to which the county planning authority have given notice in writing that development is likely to affect or be affected by the winning and working of minerals, other than coal.

506 As identified as being a key or significant resource in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground.

507 As identified as being a key or significant resource in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground.

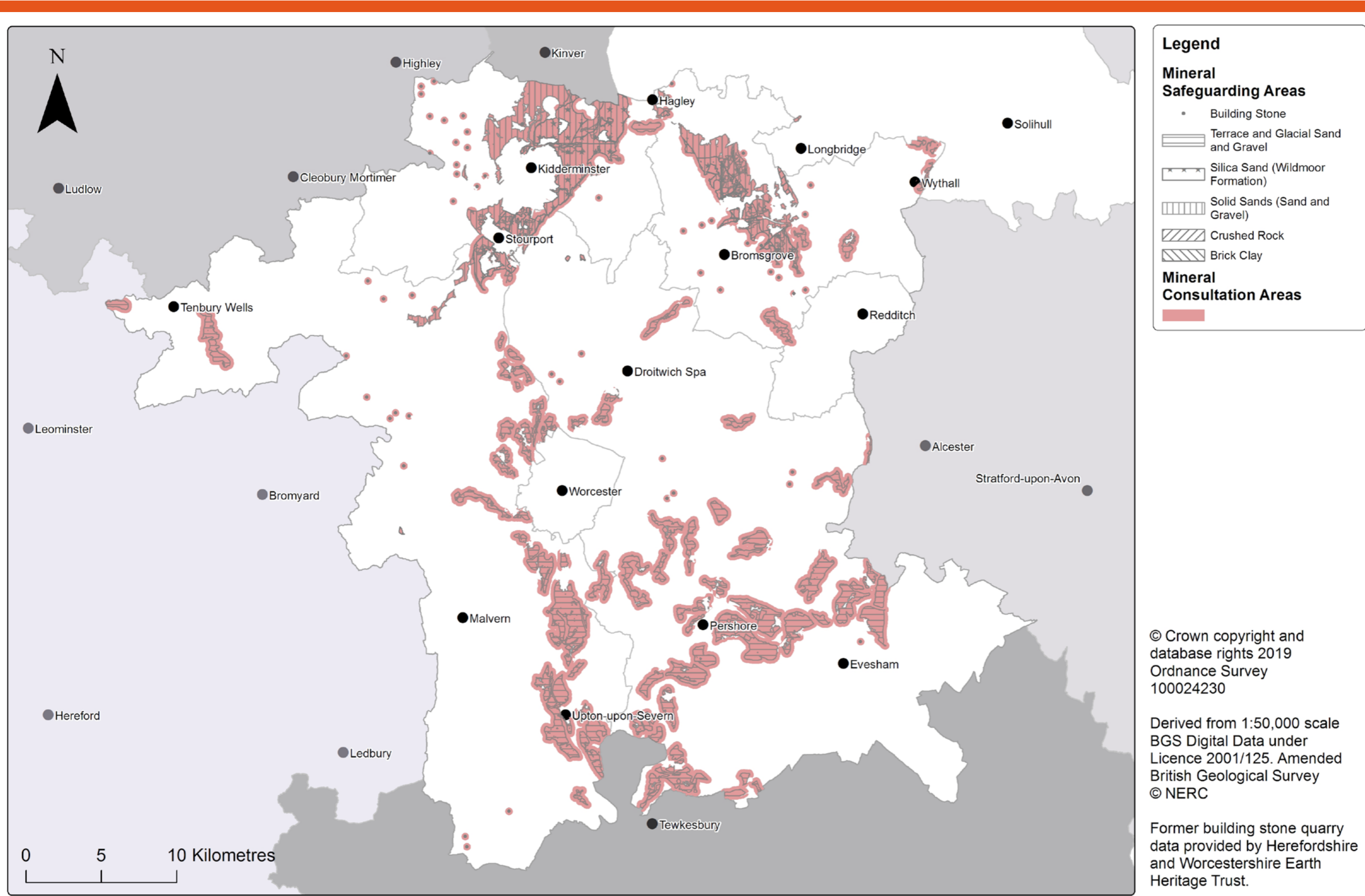
508 As identified as being a key or significant resource in Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground.

509 Proposed for safeguarding by Wienerberger Ltd. The Mercia Mudstone Group is extensive in Worcestershire and comments received during the development of the Minerals Local Plan indicated that it would not be appropriate to safeguard the whole of the formation.

510 As identified by Herefordshire and Worcestershire Earth Heritage Trust's project "A Thousand Years of Building with Stone", <http://www.buildingstones.org.uk/>

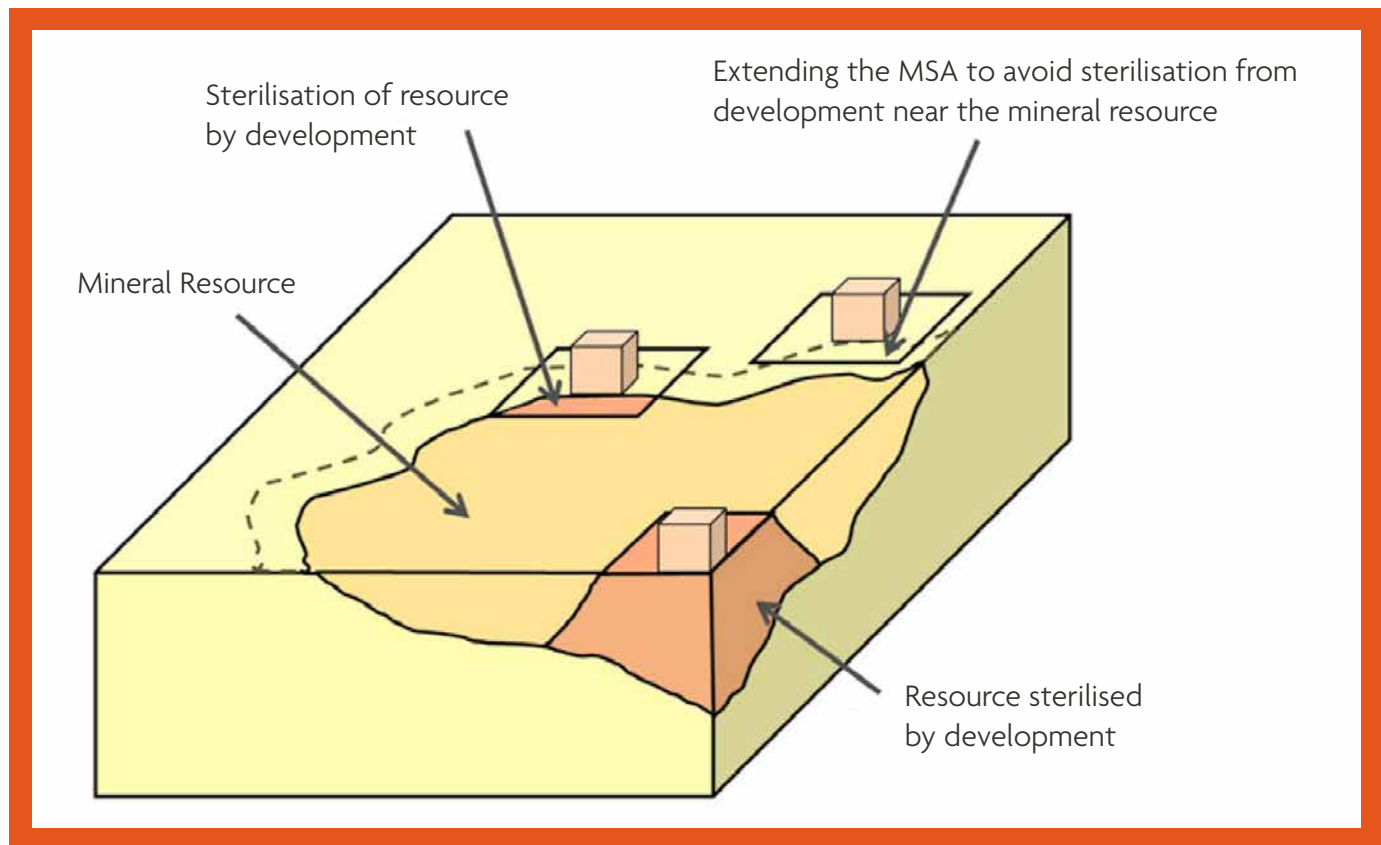
511 An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan.

Figure 7.1. Mineral Safeguarding Areas and Mineral Consultation Areas



NOTE: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan. The Mineral Safeguarding Areas and Mineral Consultation Areas can be viewed in more detail on the Policies Map (part of the interactive minerals mapping tool).

Figure 7.2 . The sterilisation of near surface mineral resource by surface development⁵¹²



7.11 Mineral Consultation Areas⁵¹³ include the area covered by the Mineral Safeguarding Areas⁵¹⁴ and an additional 250m around them to ensure both direct and indirect impacts are considered. However, they have been trimmed to remove any areas within defined settlement boundaries and sites allocated in adopted Local Plans⁵¹⁵ to recognise that the resources in these areas are already compromised to a large extent, and that any new development in those areas would be unlikely to increase the risk of sterilising a mineral resource. The Mineral Consultation Areas are defined on the Policies Map⁵¹⁶ and are shown in Figure 7.1. Mineral Safeguarding Areas and Mineral Consultation Areas.

7.12 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.

⁵¹² Adapted from British Geological Survey and The Coal Authority (2011) *Mineral safeguarding in England: good practice advice*, Figure 2.

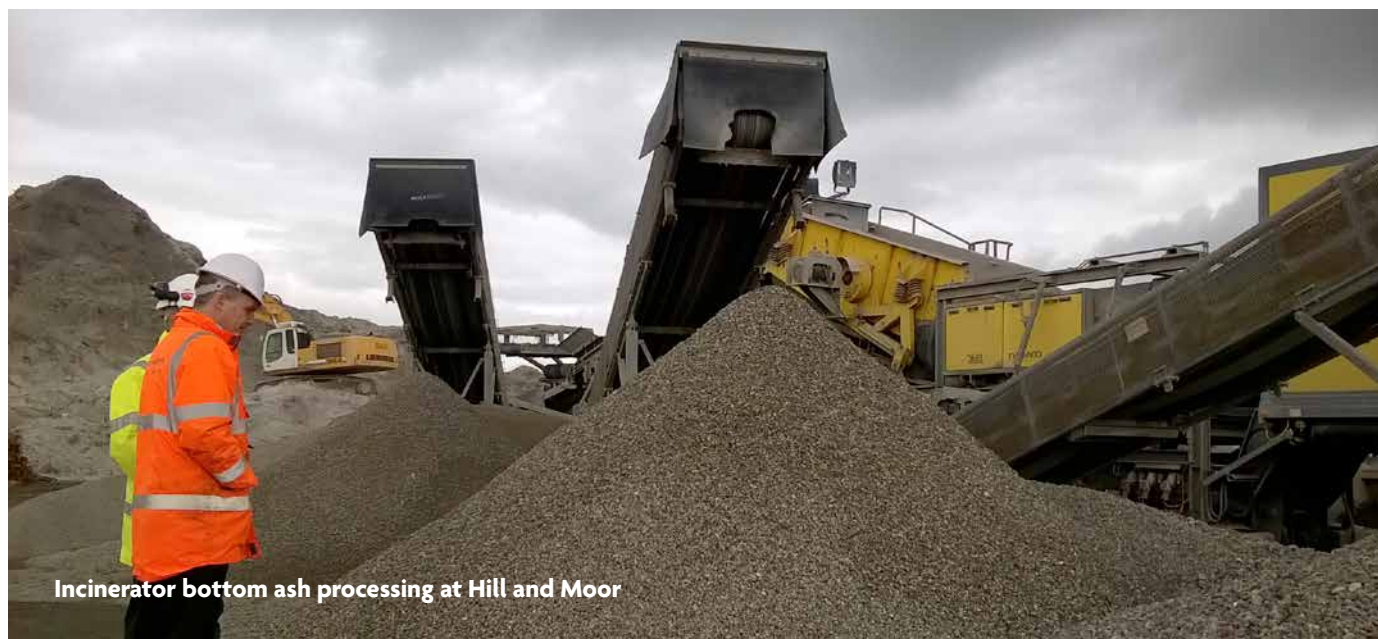
⁵¹³ Schedule 1 para. 7 of the *Town and Country Planning Act 1990* requires the local planning authority to consult the county planning authority before it can determine an application for planning permission or permission in principle for a development in an area in relation to which the county planning authority have given notice in writing that development is likely to affect or be affected by the winning and working of minerals, other than coal. Notice has been given in writing that the Mineral Consultation Areas are areas in which development is likely to affect, or be affected by the winning and working of minerals.

⁵¹⁴ Although mineral deposits extend up to and across county boundaries, the Mineral Consultation Areas do not cross the county boundary as this is beyond the remit of the Worcestershire Minerals Local Plan. However, the approach to mineral safeguarding is broadly consistent with that applied or being proposed by neighbouring Mineral Planning Authorities, which will ensure non-minerals development in one administrative area should not needlessly sterilise mineral resources in another.

⁵¹⁵ Settlement boundaries and site allocations from:

- *South Worcestershire Development Plan* (2016)
- *Wyre Forest Core Strategy* (2010)
- *Wyre Forest Site Allocations and Policies Development Plan Document* (2013)
- *Bromsgrove District Plan* (2017)
- *Borough of Redditch Local Plan No.4* (2017)

⁵¹⁶ An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan.



Incinerator bottom ash processing at Hill and Moor

Technical assessments

7.13 Policy MLP 31 requires all planning applications for non-exempt development⁵¹⁷ proposed within or partially within the Mineral Consultation Areas to be accompanied by an appropriate level of technical assessment. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of any enabling and ancillary development, such as access routes, in addition to the main development area. The assessment will be expected to contain a level of detail proportionate to the proposed development and the type of mineral resource. The Local and County Planning Authorities in Worcestershire should include this requirement in their list of validation requirements.

7.14 In order to sufficiently demonstrate the likely extent of any sterilisation and the potential economic value of the resource, consideration will need to be given to the type and sensitivity of the development proposed, and desk-based and site-based assessment of the mineral resource will be required:

Desk-based assessment:

- for aggregates, Worcestershire County Council's Analysis of Mineral Resources in Worcestershire⁵¹⁸ provides baseline information, but may need to be supplemented with further research;

- 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.⁵¹⁹

Site-based assessment to supplement and verify desk-based findings:

- techniques may include test pits, exploratory drilling, and geophysical survey.
- 7.15 The assessment must be sufficient to establish the depth, quality and extent of the resource and should establish whether the resource is of sufficient quality for the mineral to be used in relation to standard specifications. The assessment should consider the extent of potential sterilisation which the development could cause, as well as whether the sterilisation of the area adjacent to the proposed development would significantly reduce the commercial attractiveness of the wider resource area. To minimise the risk of assessments being considered insufficient, applicants should consult the Mineral Planning Authority on their proposed site investigation plan prior to undertaking any works on-site.

517 All types of development other than those identified as exempt in Table 7.1. Types of development exempt from mineral safeguarding requirements above are considered to be non-exempt development.

518 Worcestershire County Council (April 2019) *Analysis of Mineral Resources in Worcestershire*, available at www.worcestershire.gov.uk/minerals.

519 Information from the British Geological Survey will provide a starting point, see <http://www.bgs.ac.uk/products/minerals/home.html>.

- 7.16 It is also 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.
- 7.17 The results of the assessment could have a significant impact on the design of and timescales for the proposed development. It is therefore critical that the implications of mineral safeguarding and the likely impact of any minerals extraction on the design parameters for the development are considered at outline application stage.
- 7.18 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. However, in order that Worcestershire's limited natural resources are used prudently, the technical assessment accompanying the planning application will be expected to evaluate how to optimise opportunities for extraction of the mineral resource. Policy MLP 31 requires a sequential approach to be taken, 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 7.2 . The sterilisation of near surface mineral resource by surface development), either in advance of development taking place or in phases alongside the development; or
 2. where extracting all of the resource is not possible or 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.
- 7.19 Measures should be considered to ensure that the full potential of the resource can be realised, which may include stockpiling or storing the extracted resource for future use rather than it being sold immediately for lower-grade uses.
- 7.20 Where some or all of the mineral resource is to be extracted, this could potentially provide raw building materials sourced on-site, but is likely to affect the final landform available for development. This needs to be considered at the earliest stages of developing the design and phasing of the 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.
- 7.21 "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. Planning conditions or planning obligations may be required to define and manage any incidental recovery. Any extraction above and beyond this will not be considered to be "incidental recovery" and a separate minerals planning permission will be required.
- 7.22 Where minerals extraction will be controlled by a separate minerals planning permission, planning conditions and/or planning obligations may be required to manage the relationship between the minerals extraction and the subsequent non-mineral development, and 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 at Clifton sand and gravel working

7.23 In some cases, the scale of the mineral resource and/or 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 the need for the proposed development meaning that the resource must either be preserved in-situ without being sterilised, or be fully extracted. 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 should be given great or considerable weight⁵²⁰ in making this balanced judgement.

7.24 Should the technical assessment result in the mineral resource not being considered strategically important or economically valuable, 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. A lack of current 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.

⁵²⁰ Shadwell Estates Ltd v Breckland District Council v Pigeon (Theftford) Ltd [2013] EWHC 12 (Admin) states that a “decision-maker should give the views of statutory consultees ... ‘great’ or ‘considerable’ weight. A departure from those views requires ‘cogent and compelling reasons’”.

Safeguarding mineral sites and supporting infrastructure

Policy MLP 32: Safeguarding Mineral Sites and Supporting Infrastructure

Contributing to:

Objectives MO1, MO4, MO5, MO6

Permitted mineral sites (sites with extant mineral planning permissions), specific sites and preferred areas allocated in the Mineral Site Allocations Development Plan Document, and supporting infrastructure sites (existing, planned and potential sites* for the storage, handling, processing, manufacture or transport of minerals or mineral products) will be safeguarded against sterilisation by non-minerals development.

A level of technical assessment appropriate to the proposed development and its potential impact on the operation of permitted or allocated mineral sites or supporting infrastructure sites will be required for all non-exempt development** proposed within or partially within 250m of the boundary of any permitted mineral site or supporting infrastructure site to demonstrate that the proposed development would not result in an unacceptable impact on:

- a) the continued operation of a permitted mineral site;
- b) the successful restoration and aftercare of a permitted mineral site;
- c) the development of a specific site or preferred area allocated in the Mineral Site Allocations Development Plan Document; or
- d) the continued operation of any supporting infrastructure site.

Where the Local Planning Authority, having consulted the Mineral Planning Authority, considers that an unacceptable impact on the development, operation or restoration of the mineral site or supporting infrastructure could occur, the proposed non-mineral development will be refused unless it is demonstrated how the impacts will be satisfactorily mitigated by the developer of the non-mineral development as the 'agent of change'.

* "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 sites allocated in adopted Development Plan Documents.

** All types of development other than those identified as exempt in Table 7.1 are considered to be non-exempt development.

Reasoned justification

Permitted mineral sites and supporting infrastructure sites

7.25 Securing a steady and adequate supply of mineral resources requires putting safeguards in place to ensure that permitted and allocated 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. Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of non-mineral development permitted after they were established.

7.26 Sites with extant mineral planning permissions and those allocated in the Mineral Site Allocations Development Plan Document 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:** permitted minerals site in production for some time during the year;
- **inactive:** permitted minerals site worked in the past and contains permitted reserves;
- **permitted – not commenced:** minerals site with planning permission but development not yet commenced;
- **undergoing restoration:** minerals site whose permitted reserves are exhausted and restoration is taking place;
- **restored – in aftercare:** minerals site where permitted reserves are exhausted, restoration is substantially complete and the site is in managed aftercare.

7.27 Storage, handling, processing and transport sites form the infrastructure which supports the production and distribution of minerals and mineral products. It is therefore crucial to not only safeguard mineral resources and primary extraction sites, but also any existing, planned and potential supporting infrastructure sites.⁵²¹ This supporting infrastructure includes:

- hub sites for processing minerals extracted from satellite sites;
- 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 or inland waterways of minerals, including recycled, secondary and marine-dredged materials;
- sites for concrete batching, the manufacture of coated materials, or other concrete products; and
- sites for the handling, processing and distribution of substitute, recycled and secondary aggregate material.

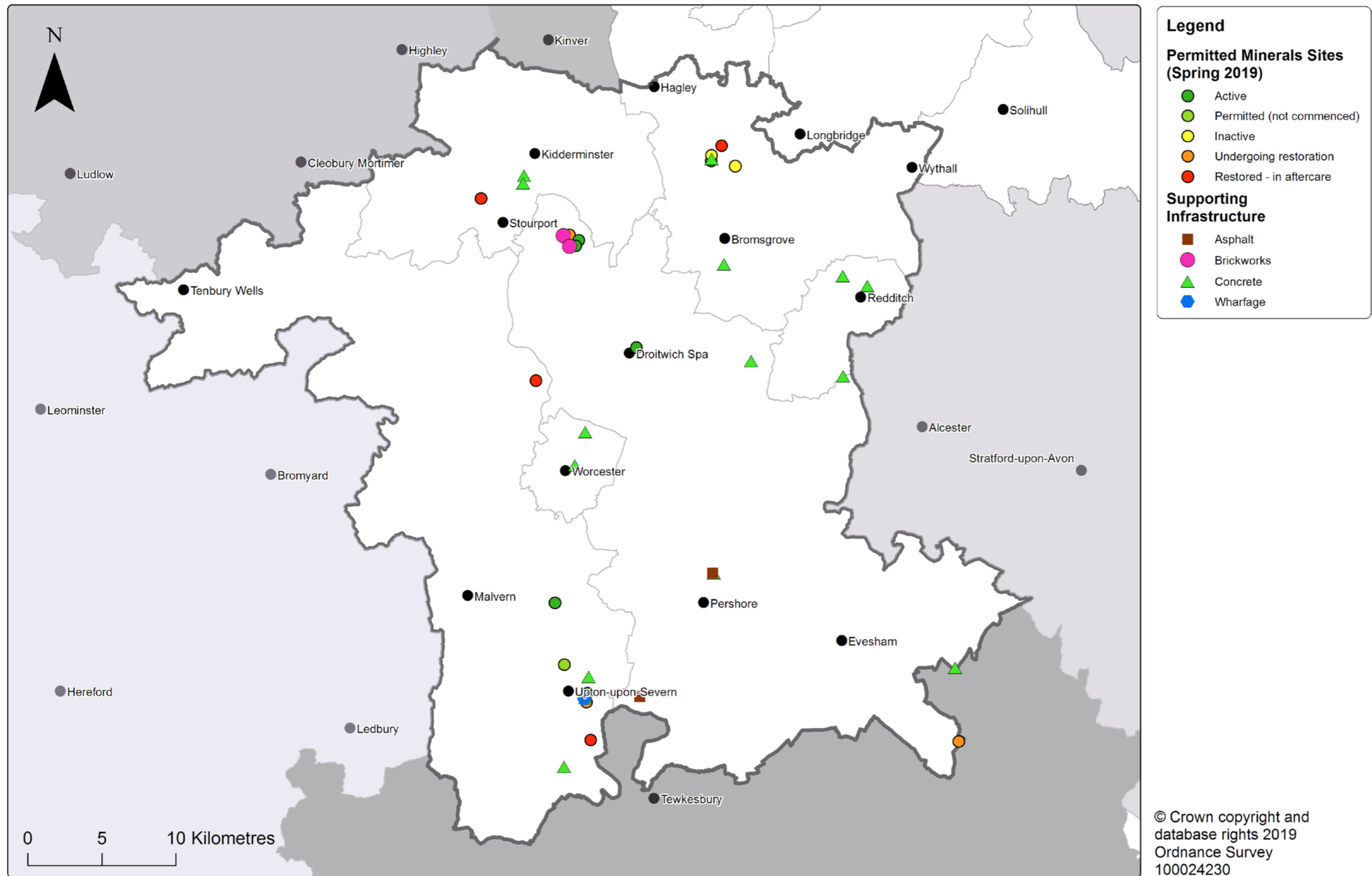
7.28 Permitted mineral sites, sites allocated in the Mineral Site Allocations Development Plan Document, and existing, planned and potential supporting infrastructure sites will therefore be safeguarded by ensuring that the potential impact of other development on the continued operation of mineral sites and supporting infrastructure sites is fully considered.⁵²²

7.29 Different types of development may or may not conflict with the use of minerals sites 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. Considering development within a distance of 250m reflects the balance between the need to protect mineral sites and supporting infrastructure and the need for a proportionate approach.

⁵²¹ "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 sites allocated in adopted Development Plan Documents.

⁵²² Schedule 1 para. 7 of the *Town and Country Planning Act 1990* requires the local planning authority to consult the county planning authority before it can determine an application for planning permission or permission in principle for development which would materially conflict with or prejudice the implementation of a relevant county policy. The county planning authority considers that any non-exempt development within 250m of a permitted mineral site, an allocation in the Mineral Site Allocations Development Plan Document, or a supporting infrastructure site could materially conflict with or prejudice the implementation of policy MLP 32.

Figure 7.3. Permitted mineral sites and supporting infrastructure sites



NOTE: An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan. Supporting Infrastructure can be viewed in more detail in the supporting data section of the interactive minerals mapping tool.

7.30 The number and status of permitted mineral sites and supporting infrastructure will alter over time as planning permissions are granted, permitted reserves are exhausted and sites restored, or planning permissions lapse which have not been implemented. The status of sites and any additional planning permissions granted will be reviewed annually as part of the Authority Monitoring Report.⁵²³ The interactive minerals mapping tool⁵²⁴ will be updated to show the location and status of mineral sites and supporting infrastructure sites. Figure 7.3. Permitted mineral sites and supporting infrastructure sites indicates the permitted mineral sites and supporting infrastructure sites to be safeguarded at the point of preparing the Minerals Local Plan.

Technical assessments

7.31 Policy MLP 32 requires all planning applications for non-exempt development⁵²⁵ proposed within 250m of a permitted mineral site, specific site or preferred area allocated in the Mineral Site Allocations Development Plan Document, or supporting infrastructure site to be accompanied by an appropriate level of technical assessment. Such assessments should be undertaken by an appropriate and competent expert and will need to take account of any enabling and ancillary development, such as access routes, in addition to the main development area. The assessment will be expected to contain a level of detail proportionate to the proposed development and the type of mineral site or supporting infrastructure site it could affect. The Local and County Planning Authorities in Worcestershire should include this requirement in their list of validation requirements.

7.32 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 a permitted mineral site, the development of an allocated minerals site, or the continued operation of a supporting infrastructure site if potential impacts are not considered in advance.

7.33 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 operation of a mineral sites or supporting infrastructure could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant for the non-mineral development (the 'agent of change'⁵²⁶) will be required to provide any necessary mitigation before the development has been completed. The responsibility for and costs of providing any necessary mitigating measures will fall to the developer of the sensitive non-mineral development, and any such measures should not add to the costs or administrative burdens of the existing or allocated mineral or infrastructure operators.

7.34 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.

7.35 The results of the technical assessment could have a significant impact on the design of and timescales for the proposed development. It is therefore critical that the implications of safeguarding mineral sites and supporting infrastructure and the likely impact of any necessary mitigation on the design parameters for the development are considered at outline application stage. The results of the assessment should be shared with the Mineral Planning Authority as a matter of urgency.

⁵²³ Worcestershire Mineral and Waste Local Development Framework Authority Monitoring Reports are available at www.worcestershire.gov.uk/amr.

⁵²⁴ An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan.

⁵²⁵ All types of development other than those identified as exempt in Table 7.1. Types of development exempt from mineral safeguarding requirements above are considered to be non-exempt development.

⁵²⁶ Ministry of Housing, Communities and Local Government (February 2019) *National Planning Policy Framework*, paragraph 182.



Ripple sand and gravel quarry

8. Implementation and monitoring framework

Implementing the Minerals Local Plan

- 8.1 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, Strategic Flood Risk Assessment, Health Impact Assessment and Equalities Impact Assessment, and is considered to set the most appropriate strategy for mineral development in Worcestershire. There are inevitable uncertainties associated with levels of mineral demand over the lifetime of the plan, but the Minerals Local Plan has been developed to be flexible enough to adapt to and enable the required quantum of mineral supply whilst protecting and enhancing the wider economic, social and environmental conditions of the county.
- 8.2 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 through considering the implications of other forms of development that may sterilise mineral resources or affect the operation of mineral sites or supporting infrastructure sites.
- 8.3 Worcestershire County Council is the Mineral Planning Authority responsible for determining planning applications for mineral development in Worcestershire, 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 31 and MLP 32, as will Worcestershire County Council in determining applications for waste management development and the County Council's own development.

8.4 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.

8.5 Worcestershire County Council as Mineral Planning Authority has committed⁵²⁷ to producing a Mineral Site Allocations Development Plan Document to provide increased certainty to mineral operators to encourage them to bring forward mineral sites, and also to provide greater certainty to communities about where mineral development is likely to take place.

8.6 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.

8.7 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 through providing advice to 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.

Monitoring framework

8.8 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 *Authority Monitoring Report (AMR)*.⁵²⁸ The *Local Aggregate Assessment*⁵²⁹ will also be updated annually. Monitoring 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;
- 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.

8.9 This section sets out arrangements for monitoring the effectiveness of the Minerals Local Plan in a set of Monitoring Schedules 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, and targets. Some indicators are relevant to more than one objective, and where this is the case the indicator is included under the most relevant objective and referred to under any other relevant objectives. These indicators will be monitored in the AMR, and together the indicators will show whether the plan's objectives are being achieved.

⁵²⁷ The timetable for the preparation of the Mineral Site Allocations Development Plan Document is set out in the *Minerals and Waste Local Development Scheme*, available at www.worcestershire.gov.uk/lids.

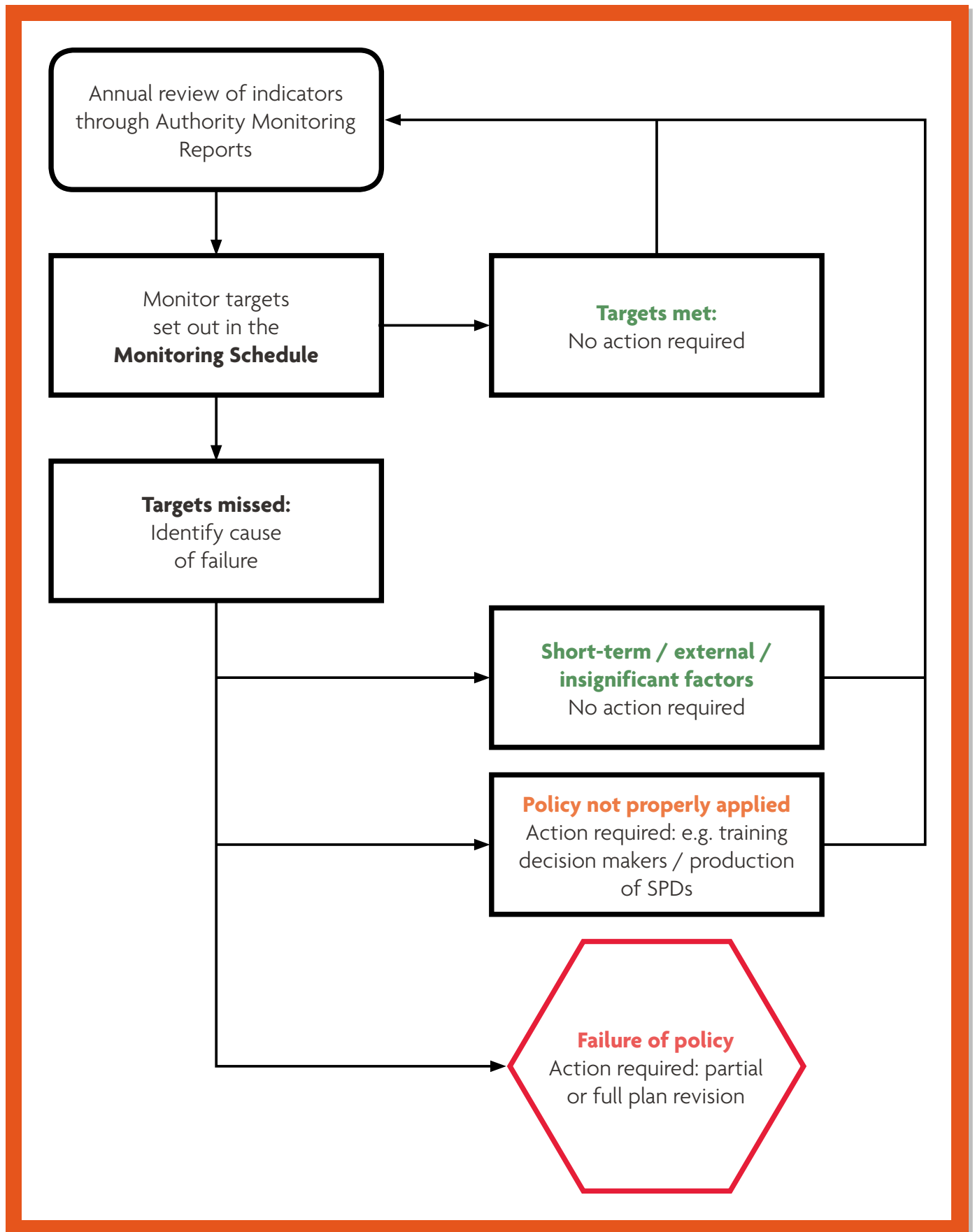
⁵²⁸ Worcestershire Mineral and Waste Local Development Framework *Authority Monitoring Reports* are available at www.worcestershire.gov.uk/amr.

⁵²⁹ Worcestershire's *Local Aggregate Assessments* are available at www.worcestershire.gov.uk/amr.

- 8.10 In determining whether targets for some indicators have been met, the Authority Monitoring Report will rely on committee reports, delegated reports and any appeal decisions to determine whether the relevant issue has been adequately considered. Reports on monitoring visits to extant sites will be used to determine whether sites are being developed in conformity with approved plans.
- 8.11 While the Minerals Local Plan looks forward to 2035, an assessment will be undertaken at least once every five years from the date of adoption to determine whether any policies need updating, taking account of any changes to local circumstances and national policy, particularly with regard to those policies which address strategic priorities.⁵³⁰ The Authority Monitoring Report will be the primary tool to provide the evidence for this assessment.
- 8.12 If monitoring indicates that targets have been missed, the process outlined in Figure 8.1 will be followed. The process sets out to establish whether any failure is the result of short-term or other factors which can be addressed through mechanisms such as training decision makers or adopting a Supplementary Planning Document (SPD), or whether the failure means that a full or partial revision of the Minerals Local Plan is required. As each objective is contributed to by a number of policies and monitored by multiple indicators, failure of a single indicator may or may not have a significant impact on whether the objective as a whole is being achieved; this will be analysed in the AMR.
- 8.13 The monitoring schedules consider how each of the objectives will be implemented and how their achievement will be monitored.

⁵³⁰ Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Plan-making* (Revision date: 13 09 2018).

Figure 8.1. Policy review process



Monitoring schedule for Objective MO 1: Enable the supply of minerals

How will this be achieved?

Policy framework	<p>MLP 1: Strategic Location of Development</p> <p>MLP 2: Borrow Pits</p> <p>MLP 9: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply</p> <p>MLP 10: Steady and Adequate Supply of Sand and Gravel</p> <p>MLP 11: Steady and Adequate Supply of Crushed Rock</p> <p>MLP 12: Steady and Adequate Supply of Brick Clay and Clay Products</p> <p>MLP 13: Steady and Adequate Supply of Silica Sand</p> <p>MLP 14: Adequate and Diverse Supply of Building Stone</p> <p>MLP 15: Supply of Other Locally and Nationally Important Industrial Minerals</p> <p>MLP 16: Supply of Energy Minerals</p> <p>MLP 17: Prudent Use of Resources</p> <p>MLP 30: Planning Obligations</p> <p>MLP 31: Safeguarding Locally and Nationally Important Mineral Resources</p> <p>MLP 32: Safeguarding Mineral Sites and Supporting Infrastructure</p>
Responsible bodies	<p>Worcestershire County Council as Mineral Planning Authority</p> <p>District, City and Borough Councils and Worcestershire County Council as Local Planning Authorities for non-mineral planning applications to address mineral safeguarding</p> <p>West Midlands Aggregate Working Party in advising on Managed Aggregate Supply System and annual Local Aggregate Assessment</p> <p>Statutory consultees or other appropriate bodies for technical advice</p>

How will we know it is being achieved?

Indicator	Baseline	Target
1. Maintaining a landbank of at least 7 years for sand and gravel	6.99-7.07 years (at 31st December 2016)	Landbank of at least 7 years
2. Maintaining or enhancing the number of sand and gravel sites with permitted reserves in relation to the baseline	5 sites with permitted sand and gravel reserves (at 31st December 2016)	5 or more sites
3. Maintaining or enhancing the number of active sand and gravel sites in relation to the baseline	At 31st December 2016: 3 active sites 2 inactive sites 1 permitted site not yet commenced	3 or more active sites
4. Achieving and maintaining a landbank of at least 10 years for crushed rock	0 years (the constraints on delivering crushed rock production in Worcestershire have been recognised through Duty to Cooperate discussions)	<p>The constraints on Worcestershire's crushed rock resources identified in the Minerals Local Plan are still extant and duty to cooperate discussions continue to indicate that surrounding Mineral Planning Authorities are able to accommodate supplying Worcestershire's demand for crushed rock</p> <p>OR</p> <p>Landbank of at least 10 years</p>

Indicator	Baseline	Target
5. Maintaining or enhancing the number of crushed rock sites with permitted reserves in relation to the baseline	0 (at 31st December 2016)	0 (zero) if duty to cooperate discussions continue to indicate that surrounding Mineral Planning Authorities are able to accommodate supplying Worcestershire's demand for crushed rock OR At least 1 site
6. Maintaining or enhancing the number of active crushed rock sites in relation to the baseline	0 (at 31st December 2016)	0 (zero) if duty to cooperate discussions continue to indicate that surrounding Mineral Planning Authorities are able to accommodate supplying Worcestershire's demand for crushed rock OR At least 1 active site
7. Number of applications received for development which would enable the supply of minerals from substitute, secondary or recycled materials or mineral waste	N/A	This indicator has no target, it is being monitored for information and may reveal trends over time
8. Sufficient stock of permitted brick clay reserves for the life of the plan	The stock of permitted reserves in December 2016 ⁵³¹ would last approximately 63 years (to 2079) based on the 10 year average of known annual sales, but based on the sites' maximum potential output this could be less than 25 years (to 2040).	Permitted brick clay reserves in the county sufficient to last until at least 2035
9. Maintaining or enhancing the number of brick clay sites with permitted reserves in relation to the baseline	2 sites with permitted brick clay reserves (at point of plan preparation 2018)	2 or more sites
10. Maintaining or enhancing the number of active brick clay sites in relation to the baseline	2 active sites (at point of plan preparation 2018)	2 or more active sites
11. Maintaining or enhancing the number of silica sand sites with permitted reserves in relation to the baseline	1 site with permitted silica sand reserves (at point of plan preparation 2018)	1 or more sites
12. Maintaining or enhancing the number of active silica sand sites in relation to the baseline	1 active site (at point of plan preparation 2018)	1 or more active sites
13. The number of building stone sites with permitted reserves in relation to the baseline	0	This indicator has no target. It will not be monitored until a relevant application is received, and will then be monitored for information which may reveal trends over time

531 As provided in confidential discussions with the operator of the clay sites in Worcestershire, Weinerberger, in April 2017

Indicator	Baseline	Target
14. The number of active building stone sites in relation to the baseline	0	This indicator has no target. It will not be monitored until a relevant application is received, and will then be monitored for information which may reveal trends over time
15. The number of active salt or brine sites	1 active site (at point of plan preparation, 2018)	This indicator has no target, it is being monitored for information and may reveal trends over time
16. The number of applications received for any other industrial minerals	N/A	This indicator has no target. It will not be monitored until a relevant application is received, and will then be monitored for information which may reveal trends over time
17. No change in status of coal deposits in the county by the Coal Authority	No coal resources of commercial value	No coal resources of commercial value (as assessed by the Coal Authority)
18. No change in the number of Petroleum Exploration and Development Licence areas within the county	0	0 (zero) Petroleum Exploration and Development Licence areas within the county
19. No non-mineral development permitted which would sterilise locally or nationally important mineral resources, mineral sites or supporting infrastructure sites where this should be avoided	N/A	0 (zero) developments permitted in Mineral Consultation Areas against Mineral Planning Authority advice
20. Optimisation of opportunities for extraction of mineral resource in advance of, or alongside, other development where it is necessary to enable that development to take place	N/A	This indicator has no target, as it will depend on the number and type of applications in Mineral Consultation Areas over the monitoring period. It will be monitored for information and may reveal trends over time
21. Percentage of applications determined within 13 weeks (16 weeks if EIA development) or within an agreed extension of time	88.9% (in the 24 months to end December 2018, against target of 60%)	In line with Government targets for planning performance

Reference will also be made to the following indicators under this objective:

Indicator 33 (MO 2)
Indicators 39 and 40 (MO 3)
Indicator 65 (MO 5)

Monitoring schedule for Objective MO 2: Protect and enhance the environmental and socio-economic function of Worcestershire’s network of green spaces and natural elements (green infrastructure)

How will this be achieved?		
Policy framework	MLP 1: Strategic Location of Development MLP 2: Borrow Pits MLP 3: Green Infrastructure MLP 4: Avon and Carrant Brook Strategic Corridor MLP 5: Lower Severn Strategic Corridor MLP 6: North East Worcestershire Strategic Corridor MLP 7: North West Worcestershire Strategic Corridor MLP 8: Salwarpe Tributaries Strategic Corridor MLP 20: Access and Recreation MLP 21: Biodiversity MLP 22: Historic Environment MLP 23: Landscape MLP 24: Soils MLP 25: Best and Most Versatile Agricultural Land MLP 26: Geodiversity MLP 27: Water Quality and Quantity MLP 28: Flooding MLP 29: Transport MLP 30: Planning Obligations	
Responsible bodies	Worcestershire County Council as Mineral Planning Authority Statutory consultees or other appropriate bodies for technical advice	
How will we know it is being achieved?		
Indicator	Baseline	Target
22. All permitted mineral developments adequately demonstrate that opportunities to deliver the green infrastructure priorities of the relevant strategic corridor will be optimised	N/A	100% of the developments which are granted planning permission
23. All permitted mineral developments adequately demonstrate that opportunities to address local economic, social and environmental impacts and opportunities have influenced the design of the development	N/A	100% of the developments which are granted planning permission
24. All permitted mineral developments adequately demonstrate that risks from climate change and any opportunities for the site to contribute towards mitigating and adapting to climate change have influenced the design of the development	N/A	100% of the developments which are granted planning permission

Indicator	Baseline	Target
25. All permitted mineral developments adequately demonstrate that site-specific opportunities to protect and enhance inherent landscape character have influenced the design of the development	N/A	100% of the developments which are granted planning permission
26. All permitted mineral developments adequately demonstrate that site-specific opportunities to conserve, restore and enhance ecological networks and deliver net gains for biodiversity have influenced the design of the development	N/A	100% of the developments which are granted planning permission
27. All permitted mineral developments adequately demonstrate that site-specific opportunities to conserve and enhance the condition, legibility and understanding of heritage assets and their setting have influenced the design of the development	N/A	100% of the developments which are granted planning permission
28. All permitted mineral developments adequately demonstrate that site-specific opportunities to reduce the causes and impacts of flooding have influenced the design of the development	N/A	100% of the developments which are granted planning permission
29. All permitted mineral developments adequately demonstrate that site-specific opportunities to protect and enhance surface water and groundwater resources at the local and catchment scale have influenced the design of the development	N/A	100% of the developments which are granted planning permission
30. All permitted mineral developments adequately demonstrate that site-specific opportunities to improve the condition, legibility and understanding of geodiversity have influenced the design of the development	N/A	100% of the developments which are granted planning permission
31. All permitted mineral developments adequately demonstrate that site-specific opportunities to enhance the rights of way network and provision of publicly accessible green space have influenced the design of the development	N/A	100% of the developments which are granted planning permission
32. All permitted mineral developments adequately demonstrate how green infrastructure benefits will be secured for the long term	N/A	100% of the developments which are granted planning permission
33. All extant mineral sites delivering development in accordance with approved working, restoration and aftercare plans	N/A	100% of the developments which are granted planning permission
34. Delivery of the green infrastructure priorities of the Avon and Carrant Brook Strategic Corridor over the life of the plan	N/A	This indicator has no target, it is being monitored for information and may reveal trends over time

Indicator	Baseline	Target
35. Delivery of the green infrastructure priorities of the Lower Severn Strategic Corridor over the life of the plan	N/A	This indicator has no target, it is being monitored for information and may reveal trends over time
36. Delivery of the green infrastructure priorities of the North East Worcestershire Strategic Corridor over the life of the plan	N/A	This indicator has no target, it is being monitored for information and may reveal trends over time
37. Delivery of the green infrastructure priorities of the North West Worcestershire Strategic Corridor over the life of the plan	N/A	This indicator has no target, it is being monitored for information and may reveal trends over time
38. Delivery of the green infrastructure priorities of the Salwarpe Tributaries strategic corridor over the life of the plan	N/A	This indicator has no target, it is being monitored for information and may reveal trends over time

Reference will also be made to the following indicators under this objective:

- Indicators 39, 42, 43, 44, 45, 46, 47 (MO 3)
- Indicator 56 (MO 4)
- Indicator 63 (MO 5)
- Indicator 71 (MO 6)

Monitoring schedule for Objective MO 3: Protect and enhance the quality, character and distinctiveness of the built, historic, natural and water environment

How will this be achieved?

Policy framework	<p>MLP 1: Strategic Location of Development</p> <p>MLP 3: Green Infrastructure</p> <p>MLP 4: Avon and Carrant Brook Strategic Corridor</p> <p>MLP 5: Lower Severn Strategic Corridor</p> <p>MLP 6: North East Worcestershire Strategic Corridor</p> <p>MLP 7: North West Worcestershire Strategic Corridor</p> <p>MLP 8: Salwarpe Tributaries Strategic Corridor</p> <p>MLP 14: Adequate and Diverse Supply of Building Stone</p> <p>MLP 17: Prudent Use of Resources</p> <p>MLP 18: Green Belt</p> <p>MLP 20: Access and Recreation</p> <p>MLP 21: Biodiversity</p> <p>MLP 22: Historic Environment</p> <p>MLP 23: Landscape</p> <p>MLP 24: Soils</p> <p>MLP 25: Best and Most Versatile Agricultural Land</p> <p>MLP 26: Geodiversity</p> <p>MLP 27: Water Quality and Quantity</p> <p>MLP 28: Flooding</p> <p>MLP 29: Transport</p> <p>MLP 30: Planning Obligations</p>
Responsible bodies	<ul style="list-style-type: none"> • Worcestershire County Council as Mineral Planning Authority • Statutory consultees or other appropriate bodies for technical advice

How will we know it is being achieved?

Indicator	Baseline	Target
<p>39. All permitted mineral developments either within a strategic corridor or:</p> <ul style="list-style-type: none"> • within the boundary of a site with extant planning permission; • a borrow pit; • would prevent some or all of a mineral resource being sterilised; or • the mineral resource has qualities which mean sustainable supply of the mineral cannot be delivered from within the strategic corridors 	N/A	100% of the developments which are granted planning permission
<p>40. Proportion of permitted mineral developments within an allocated site</p>	N/A	This indicator has no target, it is being monitored for information and may reveal trends over time

Indicator	Baseline	Target
41. All permitted mineral developments adequately demonstrate that they will preserve the openness of the Green Belt and will not conflict with the purposes of including land within the Green Belt or adequately demonstrate that very special circumstances exist which outweigh the harm to the Green Belt	N/A	100% of the developments which are granted planning permission
42. All permitted mineral developments adequately demonstrate that they will protect, conserve, enhance and deliver net gains for biodiversity	N/A	100% of the developments which are granted planning permission
43. All permitted mineral developments adequately demonstrate that they will protect, conserve and enhance the historic environment	N/A	100% of the developments which are granted planning permission
44. All permitted mineral developments adequately demonstrate that they will protect, conserve and enhance the character and distinctiveness of the landscape, including inherent landscape character and Areas of Outstanding Natural Beauty	N/A	100% of the developments which are granted planning permission
45. All permitted mineral developments adequately demonstrate that they will protect, conserve and enhance geodiversity	N/A	100% of the developments which are granted planning permission
46. All permitted mineral developments adequately demonstrate that they will protect and enhance the quality, quantity and flow of surface water and groundwater resources	N/A	100% of the developments which are granted planning permission
47. All permitted mineral developments adequately demonstrate that they will avoid increasing flood risk to people and property on site or elsewhere and contribute to a reduction in overall flood risk	N/A	100% of the developments which are granted planning permission

Reference will also be made to the following indicators under this objective:

- Indicators 13, 14 (MO 1)
- Indicators 22, 23, 25, 33, 34, 35, 36, 37, 38 (MO 2)
- Indicator 56 (MO 4)
- Indicator 63 (MO 5)
- Indicators 70, 71 (MO 6)

Monitoring schedule for Objective MO 4: Protect and enhance the health, well-being, safety and amenity of people and communities

How will this be achieved?

Policy framework	MLP 1: Strategic Location of Development MLP 2: Borrow Pits MLP 3: Green Infrastructure MLP 4: Avon and Carrant Brook Strategic Corridor MLP 5: Lower Severn Strategic Corridor MLP 6: North East Worcestershire Strategic Corridor MLP 7: North West Worcestershire Strategic Corridor MLP 8: Salwarpe Tributaries Strategic Corridor MLP 19: Amenity MLP 20: Access and Recreation MLP 28: Flooding MLP 29: Transport MLP 30: Planning Obligations MLP 32: Safeguarding Mineral Sites and Supporting Infrastructure
Responsible bodies	Worcestershire County Council as Mineral Planning Authority District, City and Borough Councils and Worcestershire County Council as Local Planning Authorities for non-mineral planning applications to address mineral safeguarding Statutory consultees or other appropriate bodies for technical advice

How will we know it is being achieved?

Indicator	Baseline	Target
48. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity, health and well-being, the environment or areas of tranquility from air quality	N/A	100% of the developments which are granted planning permission
49. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity, health and well-being, the environment or areas of tranquility from dust	N/A	100% of the developments which are granted planning permission
50. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity, health and well-being, the environment or areas of tranquility from odour	N/A	100% of the developments which are granted planning permission
51. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity, health and well-being, the environment or areas of tranquility from noise and vibration	N/A	100% of the developments which are granted planning permission

Indicator	Baseline	Target
52. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity, health and well-being, the environment or areas of tranquility from light	N/A	100% of the developments which are granted planning permission
53. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity, health and well-being, the environment or areas of tranquility from visual amenity and visual intrusion	N/A	100% of the developments which are granted planning permission
54. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity, health and well-being, the environment or areas of tranquility from land instability	N/A	100% of the developments which are granted planning permission
55. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity, health and well-being, the environment or areas of tranquility from contamination	N/A	100% of the developments which are granted planning permission
56. All permitted mineral developments adequately demonstrate that they will protect and enhance rights of way and public access provision	N/A	100% of the developments which are granted planning permission
57. All permitted mineral developments adequately demonstrate that they will use the most sustainable transport options for the movement of minerals and materials	N/A	100% of the developments which are granted planning permission
58. All permitted mineral developments adequately demonstrate that they will provide safe and convenient access for employees and visitors	N/A	100% of the developments which are granted planning permission
59. All permitted mineral developments adequately demonstrate that they will not have an unacceptable adverse effect on safety or congestion of the local or strategic transport network	N/A	100% of the developments which are granted planning permission
60. All permitted mineral developments adequately demonstrate that they will not have an unacceptable adverse effect on the environment or amenity along transport routes	N/A	100% of the developments which are granted planning permission
61. Number of active liaison committees	5 (during 2018)	This indicator has no target, it is being monitored for information and may reveal trends over time
<p>Reference will also be made to the following indicators under this objective:</p> <p>Indicator 19 (MO 1)</p> <p>Indicators 22, 23, 24, 33, 34, 35, 36, 37, 38 (MO 2)</p> <p>Indicators 39, 47 (MO 3)</p>		

Monitoring schedule for Objective MO 5: Protect and enhance the vitality of the local economy

How will this be achieved?

Policy framework	<p>MLP 1: Strategic Location of Development</p> <p>MLP 2: Borrow Pits</p> <p>MLP 3: Green Infrastructure</p> <p>MLP 4: Avon and Carrant Brook Strategic Corridor</p> <p>MLP 5: Lower Severn Strategic Corridor</p> <p>MLP 6: North East Worcestershire Strategic Corridor</p> <p>MLP 7: North West Worcestershire Strategic Corridor</p> <p>MLP 8: Salwarpe Tributaries Strategic Corridor</p> <p>MLP 9: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply</p> <p>MLP 10: Steady and Adequate Supply of Sand and Gravel</p> <p>MLP 11: Steady and Adequate Supply of Crushed Rock</p> <p>MLP 12: Steady and Adequate Supply of Brick Clay and Clay Products</p> <p>MLP 13: Steady and Adequate Supply of Silica Sand</p> <p>MLP 14: Adequate and Diverse Supply of Building Stone</p> <p>MLP 15: Supply of Other Locally and Nationally Important Industrial Minerals</p> <p>MLP 16: Supply of Energy Minerals</p> <p>MLP 17: Prudent Use of Resources</p> <p>MLP 19: Amenity</p> <p>MLP 20: Access and Recreation</p> <p>MLP 24: Soils</p> <p>MLP 25: Best and Most Versatile Agricultural Land</p> <p>MLP 28: Flooding</p> <p>MLP 29: Transport</p> <p>MLP 30: Planning Obligations</p> <p>MLP 31: Safeguarding Locally and Nationally Important Mineral Resources</p> <p>MLP 32: Safeguarding Mineral Sites and Supporting Infrastructure</p>
Responsible bodies	<p>Worcestershire County Council as Mineral Planning Authority</p> <p>District, City and borough councils and Local Planning Authorities where non-mineral planning permission would be required</p> <p>Statutory consultees or other appropriate bodies for technical advice</p>

How will we know it is being achieved?

Indicator	Baseline	Target
62. All permitted mineral developments adequately demonstrate that they will avoid significant development of best and most versatile agricultural land unless they adequately demonstrate it to be necessary	N/A	100% of the developments which are granted planning permission

Indicator	Baseline	Target
63. All permitted mineral developments adequately demonstrate that they will safeguard the long-term potential of best and most versatile agricultural land by enabling the land to retain its longer-term capability for agricultural use	N/A	100% of the developments which are granted planning permission
64. Maintain or increase % of Worcestershire's Gross Value Added (GVA) from mineral development in relation to the baseline	0.03% (contribution from minerals development was 0.03% each year from 2010-2014)	% of Worcestershire's GVA from mineral development \geq 0.03%
65. Number of applications for borrow pits	N/A	This indicator has no target, it is being monitored for information only and may reveal trends over time
66. All permitted borrow pits adequately demonstrate that they are operationally related to a specific project	N/A	100% of the borrow pit developments which are granted planning permission

Reference will also be made to the following indicators under this objective:

Indicators 1, 4, 7, 8, 19 (MO 1)

Indicators 23, 24, 33, 34, 35, 36, 37, 38 (MO 2)

Indicators 39, 47 (MO 3)

Indicators 57, 58 (MO 4)

Indicators 67, 68, 69, 70, 71 (MO 6)

Monitoring schedule for Objective MO 6: Prudent use of natural resources

How will this be achieved?

Policy framework	<p>MLP 1: Strategic Location of Development</p> <p>MLP 2: Borrow Pits</p> <p>MLP 9: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply</p> <p>MLP 17: Prudent Use of Resources</p> <p>MLP 24: Soils</p> <p>MLP 30: Planning Obligations</p> <p>MLP 31: Safeguarding Locally and Nationally Important Mineral Resources</p> <p>MLP 32: Safeguarding Mineral Sites and Supporting Infrastructure</p>
Responsible bodies	<ul style="list-style-type: none"> • Worcestershire County Council as Mineral Planning Authority • District, City and borough councils and Local Planning Authorities where non-mineral planning permission would be required • Statutory consultees or other appropriate bodies for technical advice

How will we know it is being achieved?

Indicator	Baseline	Target
67. All permitted mineral developments adequately demonstrate that they will minimise the use of water in buildings, plant and transport	N/A	100% of the developments which are granted planning permission
68. All permitted mineral developments adequately demonstrate that they will minimise the use of energy in buildings, plant and transport	N/A	100% of the developments which are granted planning permission
69. All permitted mineral developments adequately demonstrate that they will optimise energy generation from renewable and low-carbon sources	N/A	100% of the developments which are granted planning permission
70. All permitted mineral developments adequately demonstrate how the benefits of maximising the extraction of mineral resources has been balanced against any benefits of sterilisation of some of the resource	N/A	100% of the developments which are granted planning permission
71. All permitted mineral developments adequately demonstrate how they will protect and conserve soil resources	N/A	100% of the developments which are granted planning permission

Reference will also be made to the following indicators under this objective:

- Indicators 7, 19 (MO 1)
- Indicator 33 (MO 2)
- Indicator 65 (MO 5)



Broadway Quarry, near Fish Hill

Appendix 1: Superseded policies

The policies in the County of Hereford and Worcester Minerals Local Plan will remain in place until the Minerals Local Plan for Worcestershire is formally adopted by the Worcestershire County Council as the Mineral Planning Authority.

A.1.1 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.

A.1.2 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. That document therefore no longer forms part of the Development Plan for Worcestershire.



Processing sand and gravel at Ryall House Farm

Appendix 2: Identifying and defining the strategic corridors

Justification for identifying strategic corridors

- A.2.1** 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, strategic corridors have been identified (Chapter 4: Spatial strategy and Figure 4.1: Key diagram) and multifunctional green infrastructure priorities have been established for each strategic corridor (policies MLP 4 to MLP 8).
- A.2.2** Early work in developing the Minerals Local Plan considered the location of likely market demand for minerals, focusing on aggregates, in and around Worcestershire.⁵³² This showed that there was likely to be market demand for minerals from across Worcestershire, and therefore identifying a demand-led spatial strategy would not be possible or appropriate. However, the strategic corridors are spread throughout Worcestershire,

and are therefore considered to be well placed to serve market demand.

- A.2.3** The priorities identified for each strategic corridor will drive how mineral working and restoration takes place in order to maximise multifunctional green infrastructure gains at a landscape scale to benefit the environment, the economy and communities. The priorities have been developed in consultation with multiple stakeholders through a Minerals Green Infrastructure Steering Group.⁵³³
- A.2.4** While individual sites could deliver on-site green infrastructure benefits in isolation, greater gains can be delivered by pursuing a co-ordinated approach across a wider area. The priorities have been tailored to each strategic corridor, identifying integrated multifunctional priorities that are outcome focused. This will help to maximise the benefits which can be delivered by mineral working and restoration and result in benefits across multiple sites that are greater than could be achieved by considering each site in isolation.

⁵³² *Second Stage Consultation on the Minerals Local Plan*, see "step 4" on pages 57-58, available at www.worcestershire.gov.uk/minerals.

⁵³³ A Minerals Green Infrastructure Steering Group has been active throughout the development of the Minerals Local Plan to assist with embedding the Green Infrastructure approach. The group consists of Historic England (the Historic Buildings and Monuments Commission for England which was known as English Heritage until 1st April 2015); Environment Agency; Forestry Commission; Herefordshire & Worcestershire Earth Heritage Trust; Natural England; Nature After Minerals/RSPB; Worcestershire Wildlife Trust, as well as officers from the following teams within Worcestershire County Council: Strategic Planning & Environmental Policy; Worcestershire Archive and Archaeology Service; Development Management; Water/flooding (Lead Local Flood Authority); Countryside Access & Recreation.

- A.2.5** Identifying these priorities provides certainty to developers and decision makers as to the expectations for mineral working and restoration, whilst the plan as a whole provides the flexibility for site-specific issues to be taken into account. As the identified priorities are multifunctional and are appropriate to the landscape character, ecology, geology and hydrology of the corridor, they should be cost-effective for developers to implement whilst maximising gains across the components of green infrastructure.
- A.2.6** The *Analysis of Mineral Resources*⁵³⁴ formed the starting point for the identification of the strategic corridors, and the spatial distribution of locally and nationally important mineral resources was considered alongside each of the green infrastructure components to identify whether there was any coherence between clusters of locally and nationally important mineral resources on a landscape scale.
- A.2.7** 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 were excluded because, being in different landscape types, they were not considered to have the same level of potential to contribute towards the delivery of coordinated benefits at a landscape scale.

Identifying the strategic corridors: distribution of mineral resources

Aggregates – sand and gravel

- A.2.8** Key and significant terrace, glacial and solid sand resources⁵³⁵ were considered and clusters of these resources led to the identification of the Avon and Carrant Brook, Lower Severn, North West Worcestershire, and North East

Worcestershire Strategic Corridors. The strategic corridors identified contain approximately 59.9% (by area) of Worcestershire's key and significant terrace and glacial sand and gravel resources and 80.7% (by area) of Worcestershire's key and significant solid sand resources.⁵³⁶

Aggregates – crushed rock

- A.2.9** Following the Third Stage Consultation on the Minerals Local Plan, the Analysis of Mineral Resources was refreshed to take account of environmental and amenity screening criteria.⁵³⁷ After applying these criteria, no significant clusters of crushed rock resources remained which could be used to identify strategic corridors. The corridors which were identified around clusters of other mineral resources do not contain any crushed rock resources.

Building stone

- A.2.10** Former building stone quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project A Thousand Years of Building with Stone were considered to be the best indication of where building stone resources are likely to be found in Worcestershire. Following screening against environmental and amenity screening criteria,⁵³⁸ these did not indicate any significant clusters which should drive the identification of strategic corridors. However, the corridors which were identified around clusters of other mineral resources contain 13 of the screened former building stone quarries.

⁵³⁴ Based on Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018).

⁵³⁵ Based on Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018).

⁵³⁶ Based on Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground.

⁵³⁷ Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Mineral Resources* was refreshed following the Third Stage Consultation on the Minerals Local Plan to take account of environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018) available at www.worcestershire.gov.uk/mineralsbackground.

⁵³⁸ For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018) available at www.worcestershire.gov.uk/mineralsbackground.

Brick clay

A.2.11 Consideration of the Mercia Mudstone Group led to the identification of the Salwarpe Tributaries Strategic Corridor. Whilst the Mercia Mudstone Group is extensive across the county, not all the formations within it would be suitable for use as brick clay. Considering this, the Salwarpe Tributaries corridor was identified to include the area where modern commercial brick clay working has taken place and is therefore most likely to offer opportunities for further brick clay working. The strategic corridors identified contain approximately 19.5% (by area) of the screened Mercia Mudstone Group resources, as well as areas of Sherwood Sandstone and Lias Group deposits which may possess some clay properties.

Salt and brine

A.2.12 Whilst there is some 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, and therefore this did not lead to the identification of the strategic corridors. However, the corridors which were identified around clusters of other mineral resources contain 79.1% of the screened Droitwich Halite Member deposits.

Silica sand

A.2.13 The consideration of solid sand resources (for aggregates) included the Wildmoor Sandstone Formation which contains silica sand (naturally bonded moulding sands). The North West Worcestershire and North East Worcestershire Strategic Corridors were identified around this formation. The strategic corridors identified contain approximately 52.4% (by area) of the screened Wildmoor Sandstone Formation.

Identifying the strategic corridors: green infrastructure components

Landscape

- A.2.14 Within Worcestershire, there is a strong relationship between the location of mineral resources and the character of landscapes where they are found.
- A.2.15 Landscape is a visual manifestation of the interrelationship 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 Assessment⁵³⁹ has undertaken this assessment for the entire county. The assessment identifies the landscape character types⁵⁴⁰ for individual parcels of land, establishing precise boundaries where the landscape character changes.
- A.2.16 Landscape character reflects many other aspects of green infrastructure, as well as the predominant patterns of arable use, horticulture, grazing or mixed agriculture at a landscape scale, and was considered to provide a robust basis for defining cohesive clusters of resources and the precise boundaries of the strategic corridors around them. Some of the corridors consist of more than one landscape type where the characteristics of those landscape types are similar or complementary.
- A.2.17 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. The characteristics of the landscape types provide a basis for identifying locally appropriate priorities for each of the strategic corridors.

539 See Worcestershire's *Landscape Character Assessment* maps and guidance at www.worcestershire.gov.uk/lca.

540 Landscape type profiles can be downloaded from the Worcestershire *Landscape Character Assessment* webpages at www.worcestershire.gov.uk/lca.

Biodiversity

A.2.18 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 was therefore considered an appropriate mechanism for identifying landscape-scale coherence in relation to biodiversity. Existing ecological networks and opportunities for biodiversity enhancement at a landscape scale have been considered through 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*, the Biodiversity Action Plan priority habitats identified in the Worcestershire Habitat Inventory, and the Biodiversity Delivery Areas identified by the Local Nature Partnership. These have informed the locally appropriate priorities for each of the strategic corridors.

A.2.19 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.

Water environment

A.2.20 River catchments are large areas, often with diverse topography, landscape character and habitats. However, they are areas which are hydrologically linked, and in some cases the catchment boundaries have helped to inform 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. The characteristics of the catchments have influenced the priorities for each of the strategic corridors with specific consideration of fluvial and surface water flooding and water quality.⁵⁴¹

Geodiversity

A.2.21 Although the occurrence of features of geodiversity interest is dependent on the underlying geology, the distribution of designated features did not show a strong geographic pattern of distribution which could be used to identify the boundaries of the strategic corridors. However, it has informed the priorities for the strategic corridors, with particular reference to 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.

Historic environment

A.2.22 The historic environment is formed of many different features and their settings, and is often best understood when considered on a local-scale. The distribution of designated and non-designated heritage assets and Worcestershire's *Historic Landscape Characterisation* were considered, but no patterns were identified to define the strategic corridors on the basis of the historic environment. However, there is a strong relationship between landscape character and the historic environment, with landscape influencing historic land uses and these land uses and features then influencing the landscape character.

A.2.23 The distribution of designated and non-designated heritage assets was considered, but due to the variation in type, age and importance of assets across wider areas, the difficulty in defining the setting of features at a strategic scale, and the fact that a lack of recorded assets in an area does not necessarily mean that assets are not present, this did not reveal a geographic pattern which was considered appropriate to define the boundaries of the strategic corridors.

A.2.24 Defining the boundaries of the strategic corridors based on landscape character was therefore considered an appropriate mechanism for addressing the historic environment at a landscape scale. Worcestershire's *Historic Landscape Characterisation* was used to verify the validity of this approach, and has informed the priorities for the strategic corridors.

⁵⁴¹ Environment Agency, Worcestershire County Council (June 2018) *Catchment Based Management in Worcestershire Technical Background Document*

Access and recreation

A.2.25 Patterns of access and recreation assets (rights of way, long-distance paths, accessible natural green space) were considered, but no patterns were identified to define the strategic corridors on the basis of access and recreation. However patterns of access and recreation are closely associated with specific landscape types, as patterns of land use and enclosure influence the extent of public access networks. This further supports the use of landscape types as the primary mechanism for identifying the boundaries of the strategic corridors. The needs and opportunities for access and recreation have informed the priorities for the strategic corridors.

Precise corridor boundaries

A.2.26 Once coherent clusters of resources were identified to form strategic corridors, the corridor boundaries were trimmed to remove settlement boundaries and site allocations.⁵⁴² This will help to increase certainty over where mineral development is likely to take place and minimise conflict with other parts of the Development Plan for the county.

Avon and Carrant Brook Strategic Corridor

A.2.27 The Avon and Carrant Brook Strategic Corridor is focused around the Principal Village Farmlands landscape type, the Village Farmlands with Orchards landscape type, and the Riverside Meadows landscape type which runs through them.⁵⁴³

A.2.28 The northern boundary of the Avon and Carrant Brook Strategic Corridor is defined by the village farmland landscape types (Principal Village Farmlands and Village Farmlands with Orchards), 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-eastern boundary of the corridor.

A.2.29 The village farmlands landscape types are extensive in the south-west of the county and extend significantly beyond the identified clusters of mineral resources. The south-western boundary of the corridor is therefore defined by the Land Cover Parcels⁵⁴⁴ which contain key and significant terrace and glacial sand and gravel resources.⁵⁴⁵

A.2.30 The following settlements have been removed from the corridor: Beckford, Birlingham, Bredon, Bredon's Hardwick, Charlton, Cropthorne, Defford, Eckington, Evesham, Fladbury, Harvington Cross, Kinsham, Lenchwick, Lower Moor, Norton, Offenham, Pershore, Pinvin, and Wick. In addition, the following adopted site allocations from the South Worcestershire Development Plan (2016) have also been removed from the corridor: SWDP3/2, SWDP47/2, SWDP59/24, SWDP59/X, SWDP60/13, SWDP60/17, SWDP60/19, and SWDP60/22.

Lower Severn Strategic Corridor

A.2.31 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, and these landscape types define the boundaries for the majority of the corridor. These landscape types continue south into Gloucestershire, and the southern extent of the strategic corridor is defined by the county boundary.

A.2.32 Flooding issues and the prevalence of riverside habitats including wetlands and grassland areas are unifying features in this corridor, and much of the western boundary of the corridor is closely followed by 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 subarea "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.

⁵⁴² Settlement boundaries and site allocations from *South Worcestershire Development Plan (2016)*, *Wyre Forest Core Strategy (2010)*, *Wyre Forest Site Allocations and Policies Development Plan Document (2013)*, *Bromsgrove District Plan (2017)* and *Borough of Redditch Local Plan No.4 (2017)*. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018) available at www.worcestershire.gov.uk/mineralsbackground.

⁵⁴³ See Worcestershire's *Landscape Character Assessment* maps and guidance at www.worcestershire.gov.uk/lca.

⁵⁴⁴ Landscape Character Parcels are the smallest units used in the process of landscape characterisation in Worcestershire's *Landscape Character Assessment*.

⁵⁴⁵ Based on Worcestershire County Council (April 2019) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground.

A.2.33 The following settlements have been removed from the corridor: Callow End, Kempsey, Powick, Ryall, Severn Stoke and The Grove. In addition, the following adopted site allocations from the South Worcestershire Development Plan (2016) have also been removed from the corridor: SWDP45/1, SWDP59/8 and SWDP59/8a.

North East Worcestershire Strategic Corridor

A.2.34 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. These landscape types define the boundaries of the corridor, except where they are trimmed to settlement boundaries and site allocations.⁵⁴⁶

A.2.35 The following settlements and their associated site allocations, have been removed from the corridor: Barnt Green, Blackwell, Bournheath, Catshill, Clent, Fairfield, Holy Cross, Lickey End and Upper Catshill.

North West Worcestershire Strategic Corridor

A.2.36 The North West Worcestershire Strategic Corridor encompasses the Sandstone Estatelands landscape type around Kidderminster and Stourport, and the Riverside Meadows landscape type that runs through these areas. These landscape types define the boundaries of the corridor, except where they are trimmed to settlement boundaries and site allocations. The area between Kidderminster and Stourport is closely followed by the boundary of the Wyre Forest Acid Heathlands Biodiversity Delivery Area.

A.2.37 The following settlements have been removed from the corridor: Blakedown, Broadwaters, Cookley, Kidderminster, Stourport-on-Severn and Wolverley. In addition, adopted site allocations from the Wyre Forest Site Allocations and Policies Development Plan Document (2013) have also been removed from the corridor.

Salwarpe Tributaries Strategic Corridor

A.2.38 The Salwarpe Tributaries Strategic Corridor encompasses the Principal Timbered Farmlands landscape type within the River Severn Catchment Flood Management Plan subarea “Telford, Black Country, Bromsgrove, Kidderminster & Coventry Cluster”.⁵⁴⁷ The Principal Timbered Farmlands landscape type defines the boundary for the majority of the corridor, 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.

A.2.39 The following settlements have been removed from the corridor: Belbroughton, Cutnall Green, Oldfield, Stoke Prior, Upton Warren and Wychbold. In addition, adopted site allocation SWDP49/3 from the South Worcestershire Development Plan (2016) and adopted site allocation PDS1 from the Wyre Forest Site Allocations and Policies Development Plan Document have also been removed from the corridor.

⁵⁴⁶ Where the landscape type continues beyond a settlement boundary or site allocation but is severed from the main body of the strategic corridor, this has not been included as part of the corridor.

⁵⁴⁷ This mirrors the Water Framework Directive “Severn Middle Worcestershire” catchment.



Heathland habitat

Appendix 3: Glossary

For an explanation of geological formations, see the lexicon of named rock units at <http://www.bgs.ac.uk/lexicon/home.html>

A useful geology dictionary is available at <http://geology.com/geology-dictionary.shtml>.

Abstraction	Taking water from a surface source (such as a river, stream or canal) or from an underground source. Abstraction is likely to need an abstraction license from the Environment Agency.
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 has taken place during the year. 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.

Aggregate 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. Worcestershire County Council participates in the West Midlands Aggregate Working Party.
Agricultural Land Classification (ALC)	The Agricultural Land Classification provides a framework for classifying land according to the extent to which its 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 in the National Planning Policy Framework.
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).
Allocated site	For this Minerals Local Plan, allocated sites means the areas of search shown in Figure 4.1 (Key diagram) and defined on the Policies Map accompanying the Minerals Local Plan, as well as any specific sites and preferred areas allocated in the Mineral Site Allocations Development Plan Document.
Amenity	A positive element or 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.
Aquifer	An aquifer is a subsurface layer (or layers) of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater. An aquifer acts as a groundwater reservoir when the underlying rock is impermeable.
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.
Area 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. Areas of search are defined on the Policies Map accompanying the Minerals Local Plan.
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	Biodiversity (or "biological diversity") means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. This is the definition provided by the UN Convention on Biological Diversity, which subsequently appeared in the UK Biodiversity Action Plan. In simple terms, this means the diversity of plants and animals and the interactions between them.
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. See www.gov.uk/government/collections/biodiversity-offsetting .
Borrow pits	A temporary mineral working to supply material for a specific 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 extraction takes place intermittently but intensively. It often involves stockpiling the extracted materials to enable them to be processed and sold between campaigns.
County Planning Authority	Worcestershire County Council is a County Planning Authority, as defined by the Town and Country Planning Act 1990.
Cropping	Cropping is the dominance of arable farming characterised by field vegetables and/or market gardening.
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 .

Ecological network	An ecological network is a network of habitats and features which provide ecological functionality for particular, or a range of, flora and fauna. Ecological functionality means the network has both structural and functional connectivity which provides a range of services for wildlife, including opportunities to rest, shelter, forage, breed, over-winter, disperse and exchange genetic information between populations.
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. Energy minerals include coal, oil and gas, as well as "unconventional" hydrocarbons which may be accessed by hydraulic fracturing, or "fracking".
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	<p>Sites with extant planning permissions. The following categories have been developed for mineral sites in Worcestershire to indicate their operational status:</p> <ul style="list-style-type: none"> • active: permitted minerals site in production for some time during the year; • inactive: permitted minerals site worked in the past and contains permitted reserves; • permitted – not commenced: minerals site with planning permission but development not yet commenced; • undergoing restoration: minerals site whose permitted reserves are exhausted and restoration is taking place; • restored – in aftercare: minerals site where permitted reserves are exhausted, restoration is substantially complete and the site is in managed aftercare.
Exploration	The process of physical investigation to establish the presence, extent and economic viability of a mineral resource.

<p>Extant sites</p>	<p>Sites with extant planning permissions. The following categories have been developed for mineral sites in Worcestershire to indicate their operational status:</p> <ul style="list-style-type: none"> • active: permitted minerals site in production for some time during the year; • inactive: permitted minerals site worked in the past and contains permitted reserves; • permitted – not commenced: minerals site with planning permission but development not yet commenced; • undergoing restoration: minerals site whose permitted reserves are exhausted and restoration is taking place; • restored – in aftercare: minerals site where permitted reserves are exhausted, restoration is substantially complete and the site is in managed aftercare.
<p>Flood Risk Assessment</p>	<p>A site-specific assessment carried out by, or on behalf of, a developer to assess the flood risk to and from a development site.</p>
<p>Floodplain connectivity</p>	<p>Floodplain connectivity refers to measures which restore natural channel processes and allow a watercourse to flood its floodplain to its fullest extent, thereby reducing the volume and speed of water carried by the channel downstream. This is particularly important where the channel is disconnected from its floodplain (such as by high, steep, or concrete banks or artificially raised ground) which encourages flow to pass through the system as quickly as possible such that a larger flow or increased flood peak is passed downstream.</p>
<p>Fracking</p>	<p>“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.</p>
<p>Geodiversity</p>	<p>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.</p>
<p>Geopark</p>	<p>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/).</p> <p>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).</p>
<p>Glacial deposits</p>	<p>Sediment deposited by a glacier.</p>

Green Belt	Green Belt is defined in order to: check the unrestricted sprawl of large built up areas; prevent neighbouring towns merging into one another; assist in safeguarding the countryside from encroachment; preserve the setting and special character of historic towns; and assist in urban regeneration, by encouraging the recycling of derelict and other urban land. The amount of Green Belt land in Worcestershire may change if exceptional circumstances exist to justify land being added to or removed from the Green Belt. Strategic changes to the Green Belt can only be made through Local Plans, with more precise local extents also able to be defined through Local Plans and/or Neighbourhood Plans.
Green infrastructure	<p>Green infrastructure is a network of multifunctional green spaces and natural elements (including rivers, streams, canals, woodlands, street trees, parks, rock exposures and semi-natural greenspaces) that acts as a multifunctional resource capable of delivering a wide range of environmental and quality of life benefits (ecosystem services) for local communities.</p> <p>Green infrastructure components considered in the planning, designing and management of green infrastructure include biodiversity, the landscape, the historic environment, the water environment and publicly accessible green spaces and informal recreation sites.</p>
Groundwater	Water associated with soil or rocks below the ground surface, usually taken to mean water in the saturated zone.
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.
Health Impact Assessment	Health Impact Assessment (HIA) is a structured process to predict the health implications on a population of implementing a plan, policy, programme or project, aiding the decision-making process. HIA aims to enhance the positive aspects of a proposal through assessment, while avoiding or minimising any negative impacts, with particular emphasis on disadvantaged sections of communities that might be affected.
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, assets identified by the local planning authority (including local listing), and non-designated assets.
Historic environment	The historic environment encompasses 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	Horticulture is the dominance of arable farming characterised by growing fruits, vegetables, flowers, or ornamental 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.

Inactive sites	For the purpose of the Minerals Local Plan, inactive mineral sites are sites with planning permission for mineral working, where working has taken place in the past and which contain permitted reserves.
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 Aggregate 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	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 conventional and unconventional hydrocarbons), tungsten, kaolin, ball clay, potash, polyhalite and local minerals of importance to heritage assets and local distinctiveness. Not all of these types of mineral occur in Worcestershire.
Local policies	<p>The National Planning Policy Framework (February 2019) differentiates between "strategic policies" and "local policies". "Local policies" are policies contained in a neighbourhood plan, or those policies in a local plan that are not strategic policies.</p> <p>The local policies in the Minerals Local Plan are the Development Management policies which aid decision-making. Further local policies will be included in the Mineral Site Allocations Development Plan Document.</p>
Main river	Watercourses defined on a main river map designated by Defra. The Environment Agency has permissive powers to carry out flood defence works, maintenance and operational activities for main rivers. However overall responsibility for maintenance lies with the riparian owner.

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.
Managed Aggregate Supply System	The Managed Aggregate Supply System seeks to ensure a steady and adequate supply of aggregate mineral, to handle the significant geographical imbalances in the occurrence of suitable natural aggregate resources, and the areas where they are most needed. It requires mineral planning authorities which have adequate resources of aggregates to make an appropriate contribution to national as well as local supply, while making due allowance for the need to control any environmental damage to an acceptable level. It also ensures that areas with smaller amounts of aggregate make some contribution towards meeting local and national need, where that can be done sustainably. The Managed Aggregate Supply System works through national, sub-national and local partners working together to deliver a steady and adequate supply of aggregates. (Ministry of Housing, Communities and Local Government, Planning Practice Guidance, Minerals, paragraph: 060 Reference ID: 27-060-20140306 Revision date: 06 03 2014)
Mineral Consultation Area	An area designated by a Mineral Planning Authority in order to ensure consultation between the relevant Local Planning Authority and the Mineral Planning Authority before non-mineral planning applications are determined to ensure that minerals resources of local and national importance within designated Mineral Safeguarding Areas are not sterilised by non-mineral development where this should be avoided. Notice has been given in writing to the District Planning Authorities by the County Planning Authority that the Mineral Consultation Areas are areas in which development is likely to affect or be affected by the winning and working of minerals, other than coal. As such, they are subject to the provisions of Schedule 1 para. 7 of the Town and Country Planning Act 1990.
Mineral development	<p>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. Applications for mineral development are likely to include proposals for new sites or extensions to existing sites for mineral extraction, processing hubs, storage, stockpiling or transportation of minerals, and proposals to amend planning conditions at existing sites.</p> <p>The lifetime of a mineral development includes site preparation, operation (extraction and/or processing), reclamation and restoration, and aftercare.</p>
Mineral operator	The company or individual undertaking mineral development at one or more mineral sites.
Mineral Planning Authority	The Local Authority which is responsible for preparing and adopting the mineral planning policy framework for an area and determining planning applications for mineral development, in this case Worcestershire County Council.
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 resources	Mineral deposits 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 background document <i>Analysis of Mineral Resources in Worcestershire</i> (April 2019).

Mineral Safeguarding Area	An area designated by a Mineral Planning Authority in order to identify the minerals resources of local and national importance which should be safeguarded from sterilisation by non-mineral development.
Mitigation	The reduction in the significance of an impact on sensitive receptors through a range of potential measures required by planning policies and conditions on permissions.
Nationally important minerals	See "Locally and nationally important minerals".
Natura 2000 sites	A network of nature protection areas 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, transposed into UK law through the Conservation of Habitats and Species Regulations 2017. The National Planning Policy Framework (February 2019) refers to these as "habitats sites".
Natural Flood Management	Managing flood risk by protecting, restoring and emulating the natural 'regulating' function of catchments, rivers and floodplains.
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	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".
Oolitic Limestone	A carbonate rock made up mostly of ooliths which are sand-sized carbonate particles that have concentric rings of CaCO ₃ . 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.
Ordinary watercourse	A watercourse that does not form part of a main river. This includes "all rivers and streams and all ditches, drains, cuts, culverts, dikes, sluices (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows" according to the Land Drainage Act 1991.
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 being processed for mineral use.
Permissive path	A path made available through the goodwill of the landowner. It may be withdrawn at any time or is subject to an access agreement. The public have no permanent rights over it.
Permitted reserves	Mineral reserves that have the benefit of planning permission for extraction.

Policies map	The Policies Map defines the Minerals Local Plan's land-use designations and allocations. It is incorporated on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals , which also includes additional supporting data to assist in the use and implementation of the Minerals Local Plan.
Preferred area	An area of known resources where planning permission might reasonably be anticipated. Such areas may also include essential operations associated with mineral extraction. Preferred areas will be allocated in a Mineral Site Allocations Development Plan Document.
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	Thought to contain a viable resource of coalbed methane.
Public Right of Way	A path that the public have a legal right to use and which cannot be changed or removed without a Public Path Order (a legal order that creates, extinguishes or diverts public rights of way).
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.
Rights of way	Public rights of way and other access network. Other access includes canal towpaths, country parks and urban green space, nature reserves and permissive paths.
Safeguarding	The protection of mineral resources, mineral sites, and the infrastructure for their transportation and processing, from sterilisation by other forms of development.
Screening	Visual or acoustic screening may be used to mitigate amenity impacts from a development. Screening measures can include built or engineered forms and/or soft landscape elements such as vegetation. There may be seasonal variation in the degree of screening and/or filtering of impacts due to variation in vegetation between summer and winter.

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, transposed into UK law through the Conservation of Habitats and Species Regulations 2017.
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. Specific sites will be allocated in a Mineral Site Allocations Development Plan Document.
Sterilisation	A change of use or other development of land that prevents future mineral exploitation or compromises the continued operation of supporting infrastructure, either directly (for example by building over land that contains mineral resources, or redeveloping infrastructure sites for other uses) or indirectly (for example through the introduction of sensitive land uses in close proximity to those resources or sites).
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.
Strategic policies	<p>The National Planning Policy Framework (February 2019) differentiates between "strategic policies" and "local policies". "Strategic policies" are the policies and strategic site allocations which address strategic priorities in line with the requirements of Section 19 (1B-E) of the Planning and Compulsory Purchase Act 2004. They should, as a minimum, plan for and allocate sufficient sites to deliver the strategic priorities of the area (except insofar as these needs can be met more appropriately through other mechanisms, such as local policies).</p> <p>The strategic policies in the Minerals Local Plan are the policies necessary to provide an overall strategy for the pattern and scale of development, the infrastructure for the provision of minerals, and climate change mitigation and adaptation, conservation and enhancement of the natural and built and historic environment, including landscape and green infrastructure.</p>
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 (SA)	The process of appraising the sustainability of a policy document (including the Minerals Local Plan) against a set of 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 watercourses or groundwater.
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	The water environment encompasses all forms of groundwater and surface water. Surface water is water which flows or collects on the ground's surface, and surface water bodies include ordinary watercourses, main rivers, lakes, ponds and wetlands. Surface water also includes overland flow. Groundwater is water which flows or collects beneath the ground's surface, and includes areas protected as source protection zones, drinking water protected areas, and designated as aquifers.
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 Sandstone 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.



Wet grassland, Lower Moor

Appendix 4: Acronyms

ALC	Agricultural Land Classification
AONB	Area of Outstanding Natural Beauty
AWP	Aggregate Working Party
BAP	Biodiversity Action Plan
DPD	Development Plan Document
EIA	Environmental Impact Assessment
GVA	Gross Value Added
HRA	Habitats Regulations Assessment
ROMP	Review of Mineral Permissions
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
WFD	Water Framework Directive

Please contact us if you need this document in another format, or if you have any questions.

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