Worcestershire

Minerals Local Plan 2018-2036

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

worcestershire
county council

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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 markets[1]. 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 tiles[2].
- **Industrial minerals** are used to manufacture products. These include special types of sand for making glass, clay for making bricks and ores for metals.
- **Building stones** are cut or shaped into blocks or slabs for use as walling, paving or roofing materials in the construction of buildings and other structures.
- **Energy minerals** such as coal, oil and gas are used for fuel.

1.2 Mineral deposits occur naturally. They are finite and, 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, building stones, 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 Worcestershire[3]. The Minerals Local Plan sets out the long-term planning strategy for mineral development in Worcestershire to 2036 and beyond[4]. It seeks to enable sustainable development by balancing the need for minerals against any potential harm, and seeks to maximise the potential for social, economic and environmental benefits to be realised.

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

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.

the City, Borough and District Councils in Worcestershire, plus adopted Neighbourhood Plans in the county. Once adopted, the forthcoming Minerals Site Allocations Development Plan Document will sit alongside the Minerals Local Plan and will also be part of the Development Plan. 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 the Mineral Site Allocations Development Plan Document (once adopted), 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]. No individual policy will be considered by decision makers in isolation, but greater or lesser weight may be given to a particular policy depending on the nature and merits of the proposed development.

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).

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 2036 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 – 2027[6].

5 *Planning and Compulsory Purchase Act 2004.*

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

1.11 Implementation of the Minerals Local Plan will be monitored throughout its lifetime through the Authority Monitoring Report[7]. It will be reviewed at least once every five years to ensure that policies remain relevant and effectively address the needs of the local community[8].

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, Green Infrastructure Strategy, and Landscape Character Assessment, 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.

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).

Photo of restored sand and gravel quarry, Retreat Farm near Grimley

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 40).

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.

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.

Context

2.2 The county of Worcestershire has a population of 588,370[9] 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.

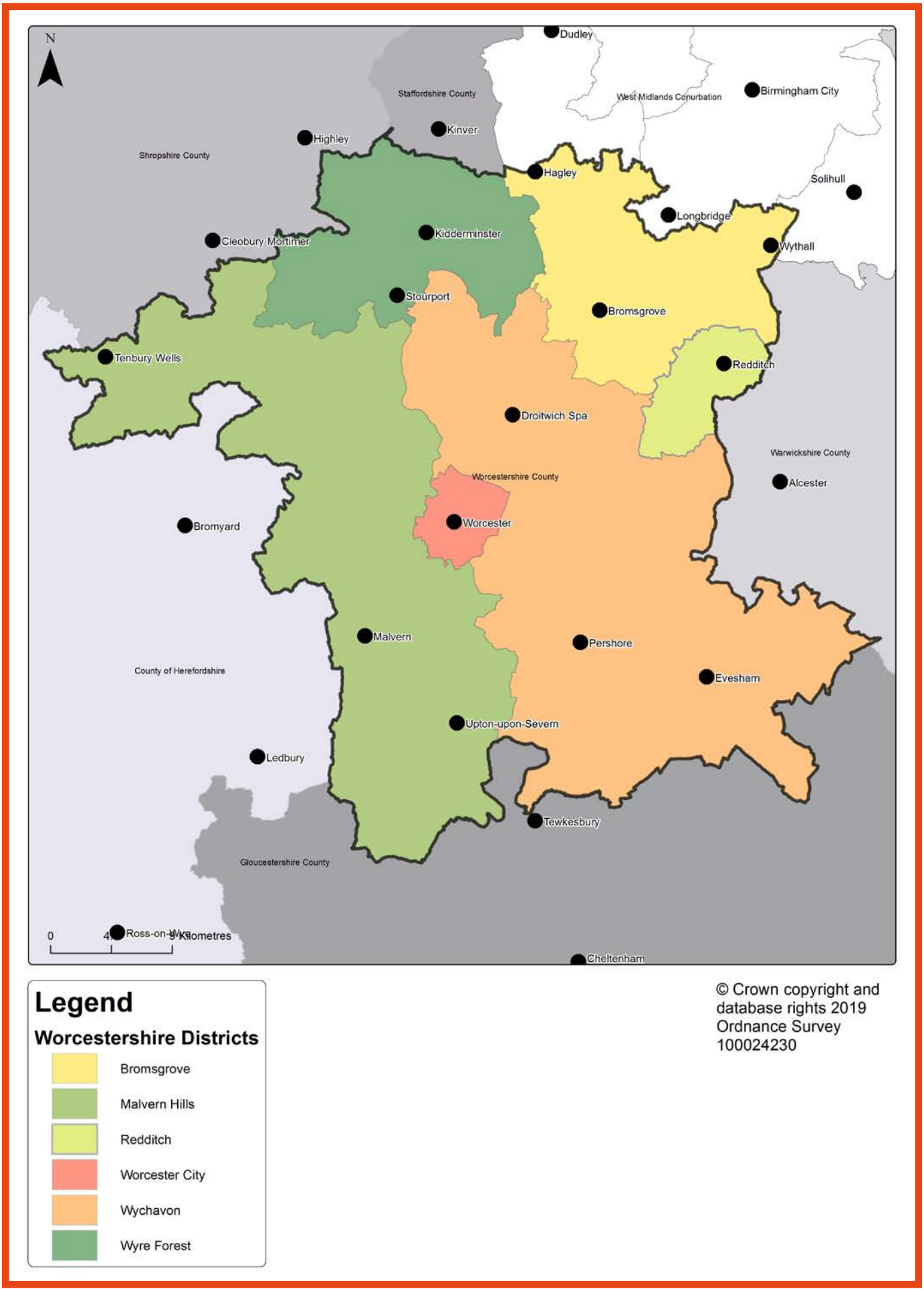
2.4 Agricultural land and open countryside dominate the landscape, but 70% of the population lives in the urban centres of Worcester, Redditch, Kidderminster, Bromsgrove, Malvern, Droitwich Spa, Evesham and Stourport-on-Severn. Much of the north-east of the county is designated as Green Belt, as well 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 businesses[10]. The county is rich in high-quality environmental assets which form part of a wider network of green infrastructure.

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



2.6 Significant development is planned in Worcestershire, with anticipated population growth of approximately 7.5% over the plan period[11], and total provision of housing and employment land in current Local Plans of around 46,000 and 400ha, respectively[12]. Worcestershire County Council's "Open for Business" agenda[13] 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 2025[14]. 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 output[16] (GVA) 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 2036 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;
- 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.

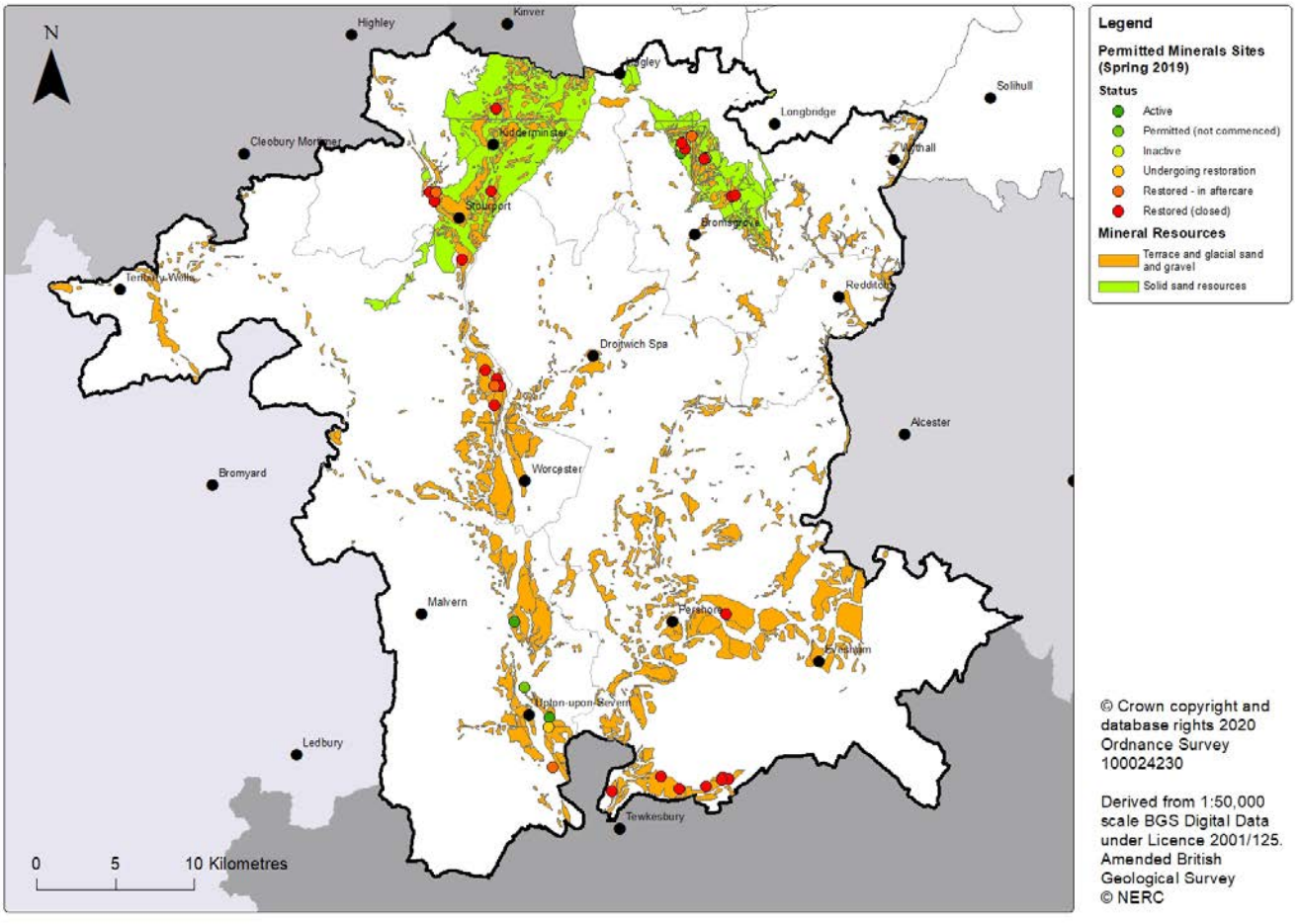
19 The Coal Authority and CoalPro consider the deposits in Worcestershire to be thin to the point of fragmentary and of no commercial value. See the *Coal mining in Worcestershire* background document for more information, available at **www.worcestershire.gov.uk/mineralsbackground**.

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

Aggregates

Sand and gravel

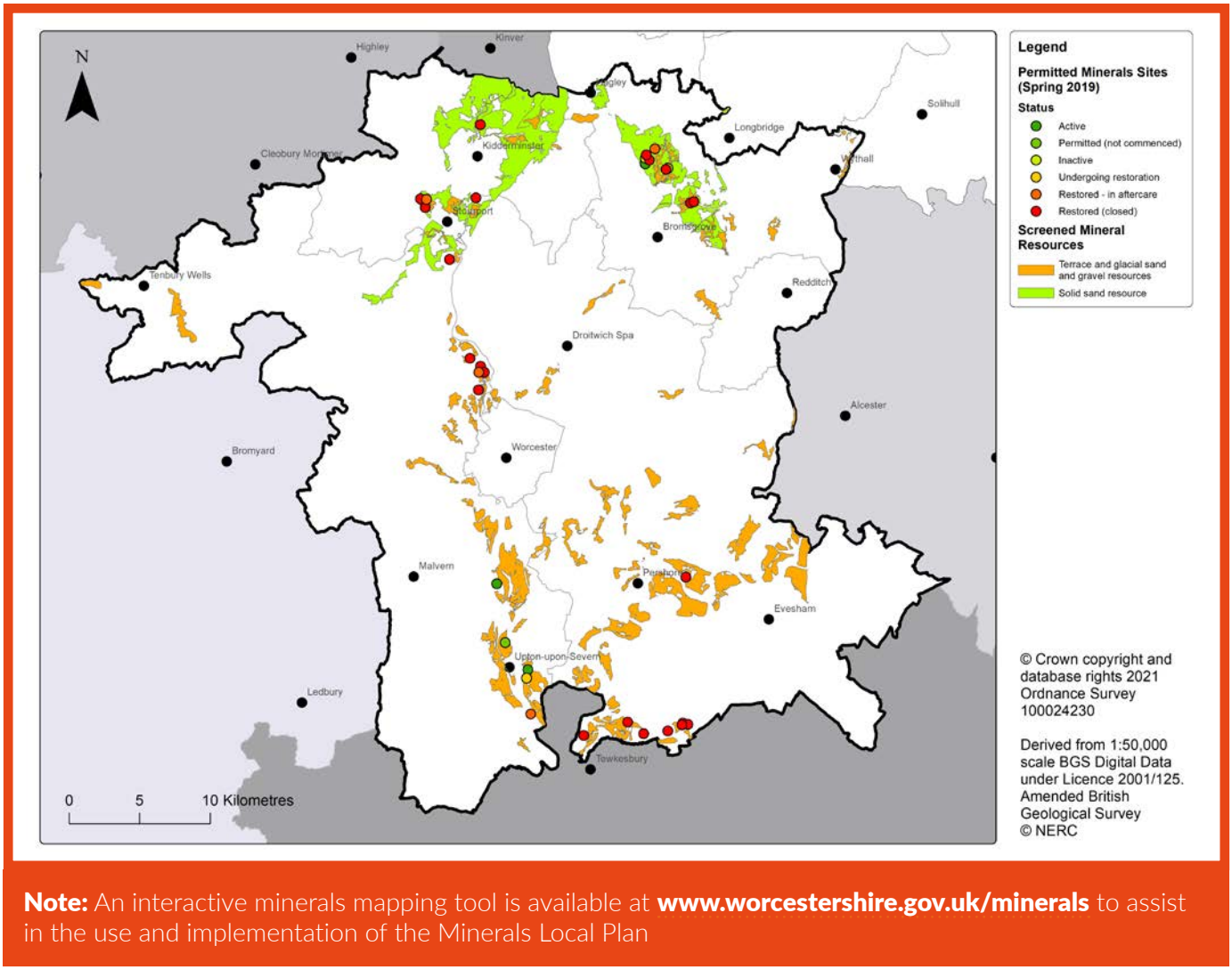
Figure 2.2a. Sand and gravel resources in the county (before the application of any screening criteria)[21]



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

21 Derived from 1:50,000 scale BGS digital data under Licence 2001/125.

Figure 2.2b. Sand and gravel resources in the county (after the application of screening criteria)[22]



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

2.13 In Worcestershire sand and gravel resources occur as terrace and glacial sand and gravel deposits (materials transported and deposited by water or ice)[23] and solid sand deposits (which form part of the bedrock geology). These are identified separately in Figure 2.2a and 2.2b 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[24]. 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 sites[25], 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[26].

22 Figure 2.2b identifies the sand and gravel resources (derived from 1:50,000 scale BGS digital data under Licence 2001/125) that have been assessed as being "key" or "significant" resources after the application of screening criteria, see Worcestershire County Council (2021) *Analysis of Mineral Resources.*

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

25 Clifton Quarry and Ryall's Court Farm Quarry (with processing at Ryall House Farm). See Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017),* available at **www.worcestershire.gov.uk/amr.**

26 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[27]. These deposits have not been worked extensively in Worcestershire and in recent times have only been worked alongside underlying solid sands[28].

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 2.2a). 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.[29] It is currently worked at three sites in Worcestershire,[30] although not to the full depth of the formation. The Kidderminster Formation can be up to 200m thick[31] 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.[32]

2.17 As the qualities and properties of these deposits vary, the sand and gravel resources in Worcestershire are capable of supplying the markets for various types of sands (sands for asphalt, building or mortar sands, and concrete or sharp sands). 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.[33] In the Kidderminster Formation, the sand grains are coarse- to fine-grade, and pebbles and cobbles can also be found,[34] 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 asphalting sand.[35]

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" resources to facilitate the flexibility of market supply from each deposit.

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.[36] In the longer term this could result in shortages in material supply and increased cost to the economy.[37]

2.21 Between 2008 and 2017, an average of 572,000 tonnes of sand and gravel were produced for aggregate purposes each year in Worcestershire (Figure 2.3. Sand and gravel annual and average sales 2008-2017).[38]

27 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.*

28 Since at least the 1960s.

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

30 Sandy Lane Quarry, Wildmoor Quarry, Pinches 3 Quarry. See Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at **www.worcestershire.gov.uk/amr.**

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

32 Shepley Quarry and Pinches Quarry.

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

34 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.*

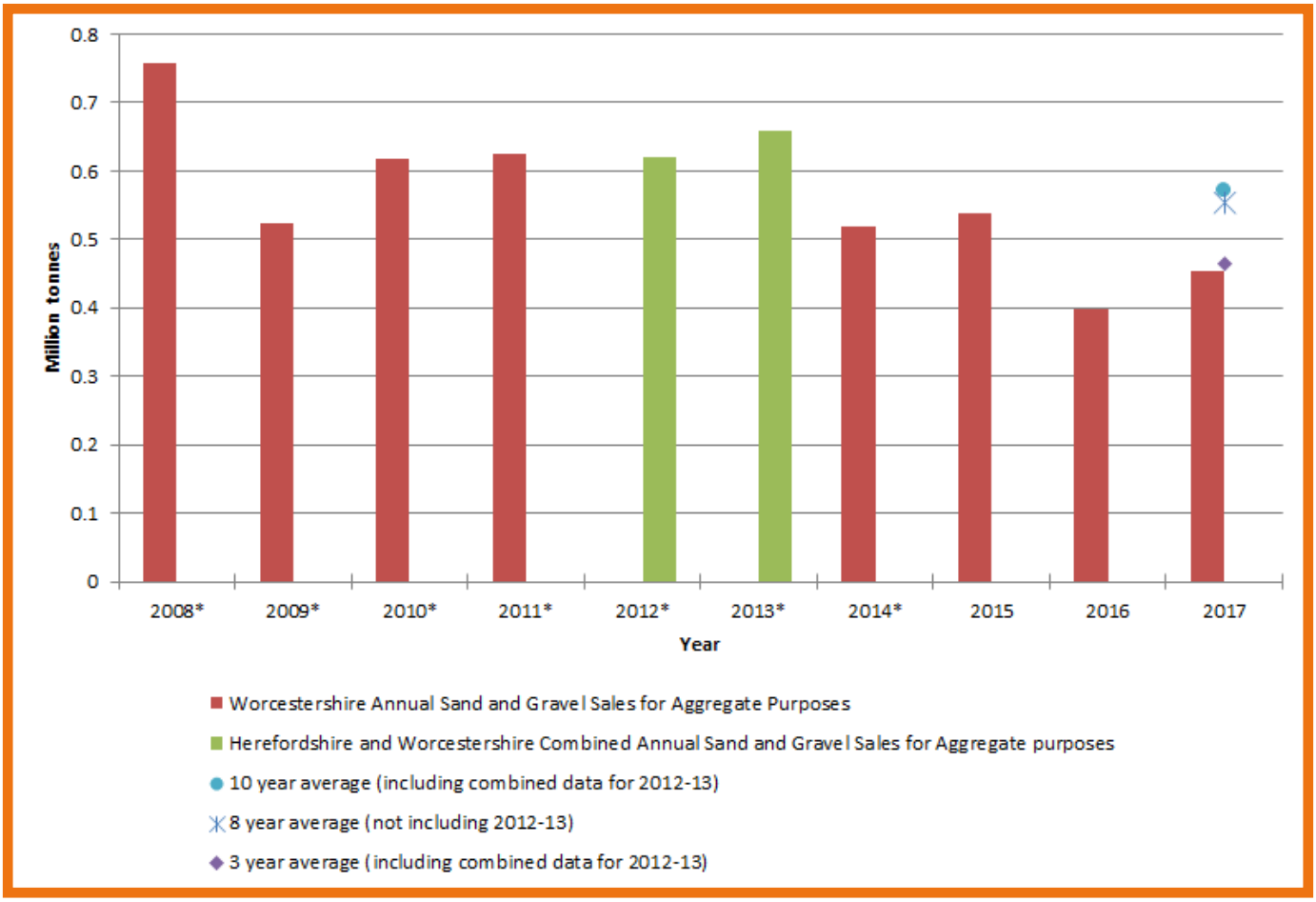
35 Based on information supplied by mineral operators in response to West Midlands Aggregate Working Party's Aggregates Surveys.

36 *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.

37 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/**

38 Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at **www.worcestershire.gov.uk/amr**.

Figure 2.3. Sand and gravel annual and average sales 2008-2017[39]



2.22 In 2017 there were three "active"[40] and one "inactive"[41] sand and gravel workings and processing facilities in the county, with sales of 455,000 tonnes of sand and gravel. Three 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".[42] No minerals planning applications were made, decided or pending decision during 2017. The landbank for sand and gravel in Worcestershire was 6.06 years at 31st December 2017.[43] The National Planning Policy Framework sets a landbank requirement for sand and gravel of at least 7 years.[44]

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,[45] although the proportion of imports was greater in 2014 (Table 2.1. Balance of sand and gravel exports and imports in Worcestershire).

39 Figure 1 from Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at **www.worcestershire.gov.uk/amr**.

40 "Active" sites are permitted minerals sites in production for some time during the year.

41 "Inactive" sites are permitted minerals sites worked in the past and containing permitted reserves.

42 In the 2017 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.

43 Landbank at 31st December 2017 based on permitted sand and gravel reserves of 3.465 million tonnes and an annual production guideline of 0.572 million tonnes. Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at **www.worcestershire.gov.uk/amr**.

44 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 213(f).

45 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.

Table 2.1. Balance of sand and gravel exports and imports in Worcestershire[46]

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.[47] 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 2017, approximately 45.9% was sold within Worcestershire, 46.8% was exported to the wider West Midlands, 7% to the South West, and less than 0.2% to South Wales.[48] There is no equivalent information available to indicate the level of imports into Worcestershire in 2017.

Future sand and gravel supply

2.25 47.2% of Worcestershire's sand and gravel resources[49] are not affected by significant viability, environmental or amenity constraints (54.7% of Worcestershire's solid sand resources[50] and 42.2% of Worcestershire's terrace and glacial sand and gravel resources[51]). These screened resources can be seen in Figure 2.2b.

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 Assessment[52] identifies an annual production guideline of 0.572 million tonnes.

2.27 It is estimated that at least a further 11.407 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.[53] 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.[54] 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.

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**.

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

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

49 By area (14,543 hectares of 30,818 hectares). Worcestershire County Council (2021) *Analysis of Mineral Resources* takes account of viability, 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**.

50 By area (6,727 hectares of 12,306 hectares). Worcestershire County Council (2021) *Analysis of Mineral Resources* takes account of viability, 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 (7,816 hectares of 18,512 hectares). Worcestershire County Council (2021) *Analysis of Mineral Resources* takes account of viability, 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 Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at **www.worcestershire.gov.uk/amr**.

53 Figure based on the production guideline of 0.572 million tonnes each year from 2018 to 2036 and baseline permitted reserves of 3.465 million tonnes of sand and gravel at the end of 2017, but the plan includes sufficient flexibility to adapt to any changes in the production guideline.

54 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.

Crushed Rock[55]

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 resources in Worcestershire are considered together to facilitate the flexibility of market supply from each deposit.

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[56,57].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[58]. Aymestrey 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.[59]

2.31 Ordovician Lickey Quartzite occurs in a small inlier near Bromsgrove. This may be suitable for uses which require high resistance to abrasion.[60]

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.[61] The working of crushed rock in the Malvern Hills ceased in 1977.

55 Sometimes referred to as "hard rock".

56 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).

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

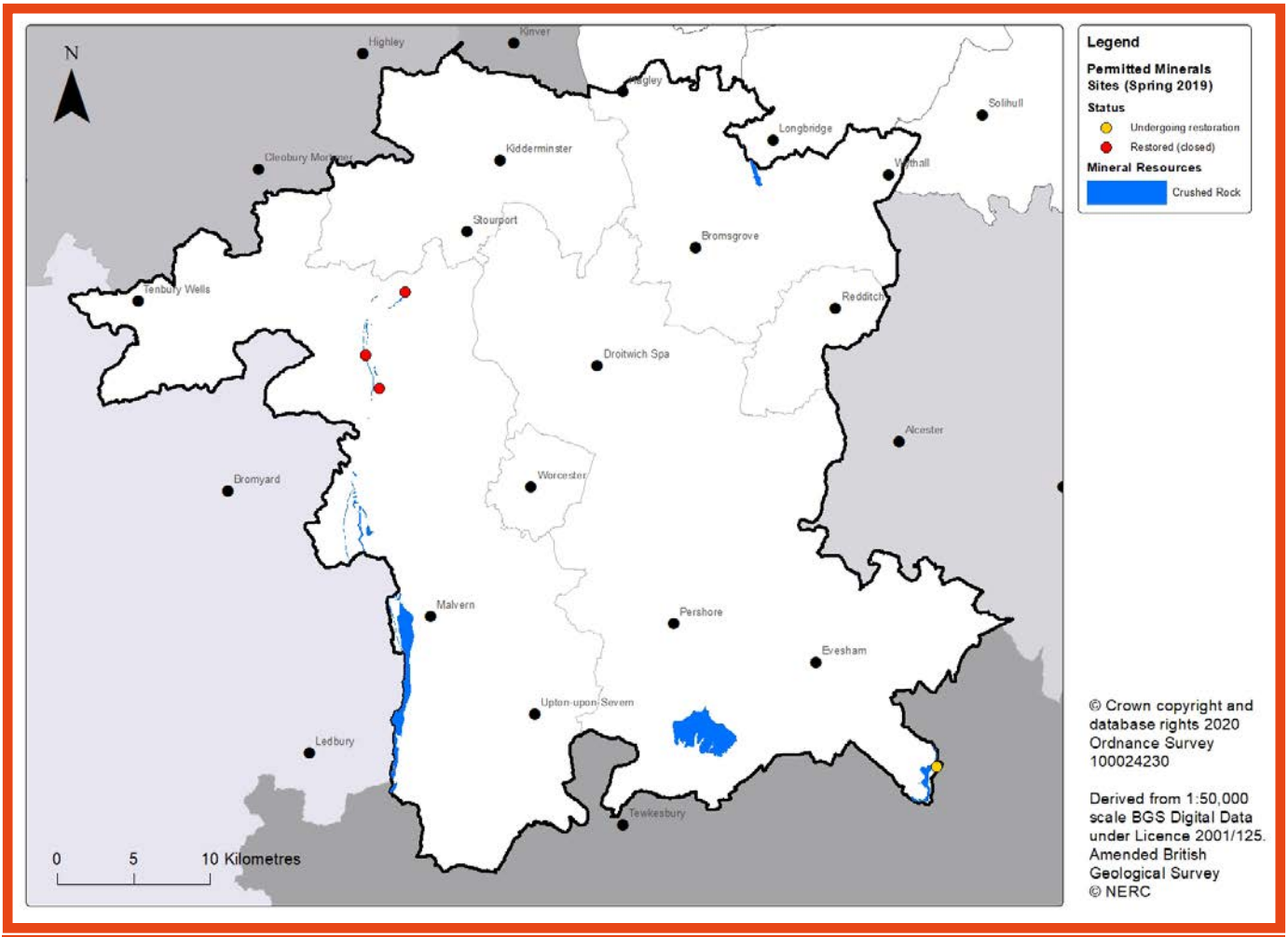
58 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*

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.*

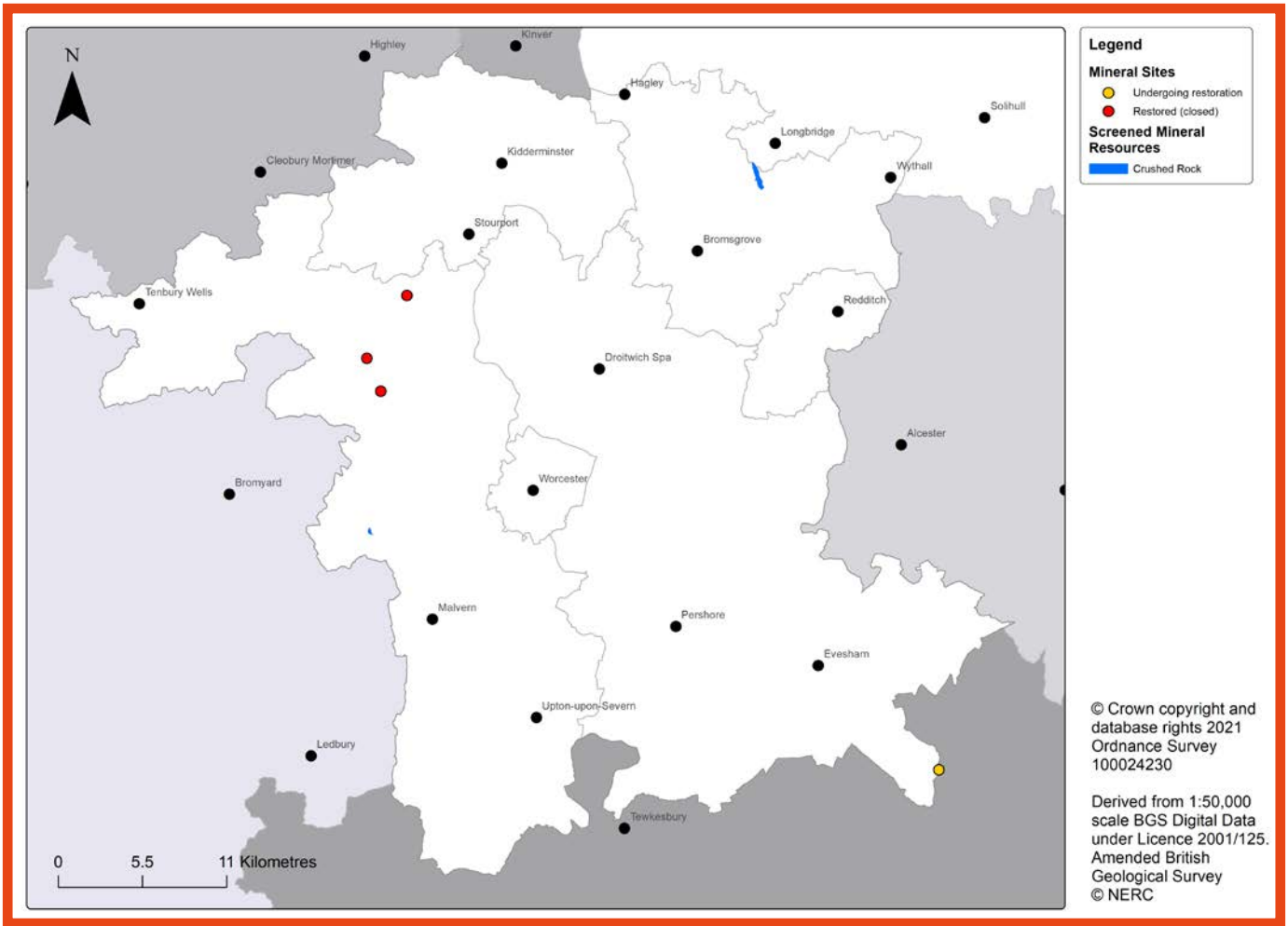
Figure 2.4a. Crushed rock resources in the county (before the application of any screening criteria)[62]



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

62 Derived from 1:50,000 scale BGS digital data under Licence 2001/125.

Figure 2.4b. Crushed rock resources in the county (after the application of screening criteria)[63]



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

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 2008 and 2017 it is estimated that an average of 14,000 tonnes of crushed rock were produced for aggregate purposes each year in Worcestershire[64], although no extraction has taken place since 2010 (Figure 2.5. Crushed rock annual and average sales 2008-2017).

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 2017, 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 Figure 2.4b identifies the crushed rock resources (derived from 1:50,000 scale BGS digital data under Licence 2001/125) that have been assessed as being "key" or "significant" resources after the application of screening criteria, see Worcestershire County Council (2021) *Analysis of Mineral Resources.*

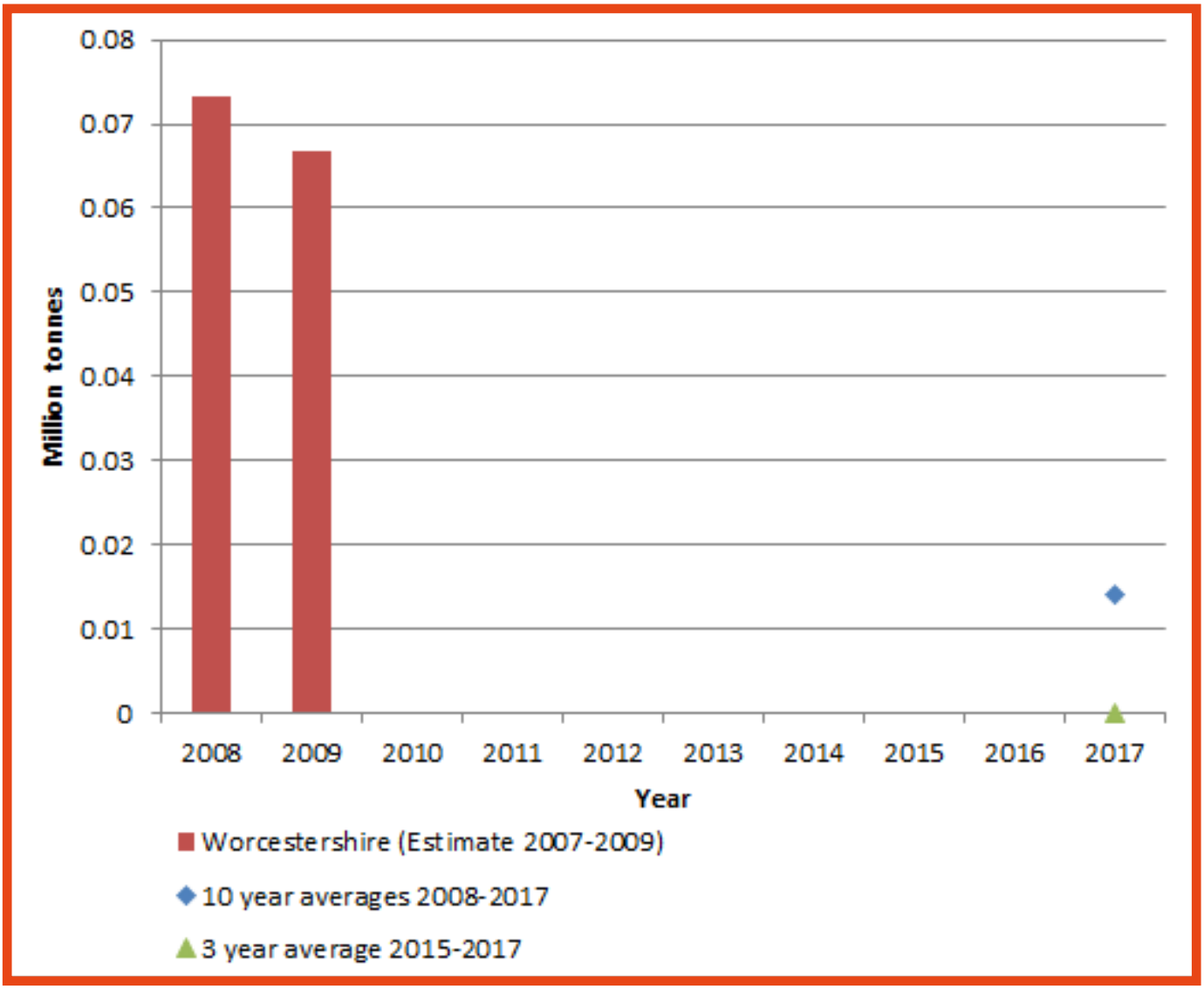
64 Estimated sales based on the assumption that a third of the combined crushed rock sales from Herefordshire and Worcestershire were attributable to Worcestershire as data was combined due to issues of commercial confidentiality. See Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at **www.worcestershire.gov.uk/amr**.

65 Broadway Quarry at Fish Hill, working Oolitic Limestone.

66 Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at **www.worcestershire.gov.uk/amr**.

67 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 213(f).

Figure 2.5. Crushed rock annual and average sales 2008-2017[68]



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 2017, however all of the demand for crushed rock in Worcestershire since 2011 has been met by imports.

68 Figure 4 from Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, 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.

Table 2.2. Balance of crushed rock exports and imports in Worcestershire[70]

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

Future crushed rock supply

2.37 Only 2.2% of Worcestershire's crushed rock resources are not affected by significant viability, environmental or amenity constraints.[71] These are identified in Figure 2.4b. Much of the crushed rock resource in Worcestershire is in areas with the highest levels of international and national designations, as outlined below:

- Of the land containing Malverns Complex and Warren House Formation deposits in Worcestershire:
  - » 99.6%[72] is within the Malvern Hills Area of Outstanding Natural Beauty;[73] and
  - » 78.9%[74] is controlled by the Malvern Hills Conservators[75] 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]
- Of the land containing limestone deposits in Worcestershire:
  - » 37.4%[77] is within 2.5km of the Bredon Hill Special Area of Conservation (SAC);[78]
  - » 93.7%[79] is within the Malvern Hills Area of Outstanding Natural Beauty or the Cotswolds Area of Outstanding Natural Beauty;[80] and
- None of the land containing Lickey Quartzite deposits in Worcestershire are affected by significant viability, environmental or amenity constraints.[81]

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 2,745 hectares). Worcestershire County Council (2021) *Analysis of Mineral Resources* takes account of viability, 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 (698 hectares of 701 hectares). Worcestershire County Council (2021) *Analysis of Mineral Resources* takes account of viability, 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 (July 2021) *National Planning Policy Framework* (paragraph 211(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 (533 hectares of 701). Worcestershire County Council (2021) *Analysis of Mineral Resources* takes account of viability, 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**.

77 By area (764 hectares of 2,044 hectares). Worcestershire County Council (2021) *Analysis of Mineral Resources* takes account of viability, 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 (July 2021) *National Planning Policy Framework*, paragraph 182). 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 (1,915 hectares of 2,044 hectares). Worcestershire County Council (2021) *Analysis of Mineral Resources* takes account of viability, 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 (July 2021) *National Planning Policy Framework* (paragraph 211(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 (2021) *Analysis of Mineral Resources* takes account of viability, 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**.

2.38 The viability, environmental and amenity constraints outlined above are not in themselves an absolute bar to working crushed rock 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 Conservators[82] 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 Assessment[83] 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]

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.

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 (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, 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.

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

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 At the end of December 2017, there was only one "active" site[91] in the county which worked silica sand as an ancillary activity to the working of aggregate sand, and there is no publicly available information about the scale of the permitted silica sand reserves at this site. This site does not have industrial plant directly associated with it and instead supplies small individual foundries and other users and there is no indication that the operator of the current site wishes to invest in industrial plant to use silica sand.[92] There is no information regarding where silica sand resources occur within the Wildmoor Sandstone Formation beyond the boundary of the existing site.

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]

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

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.

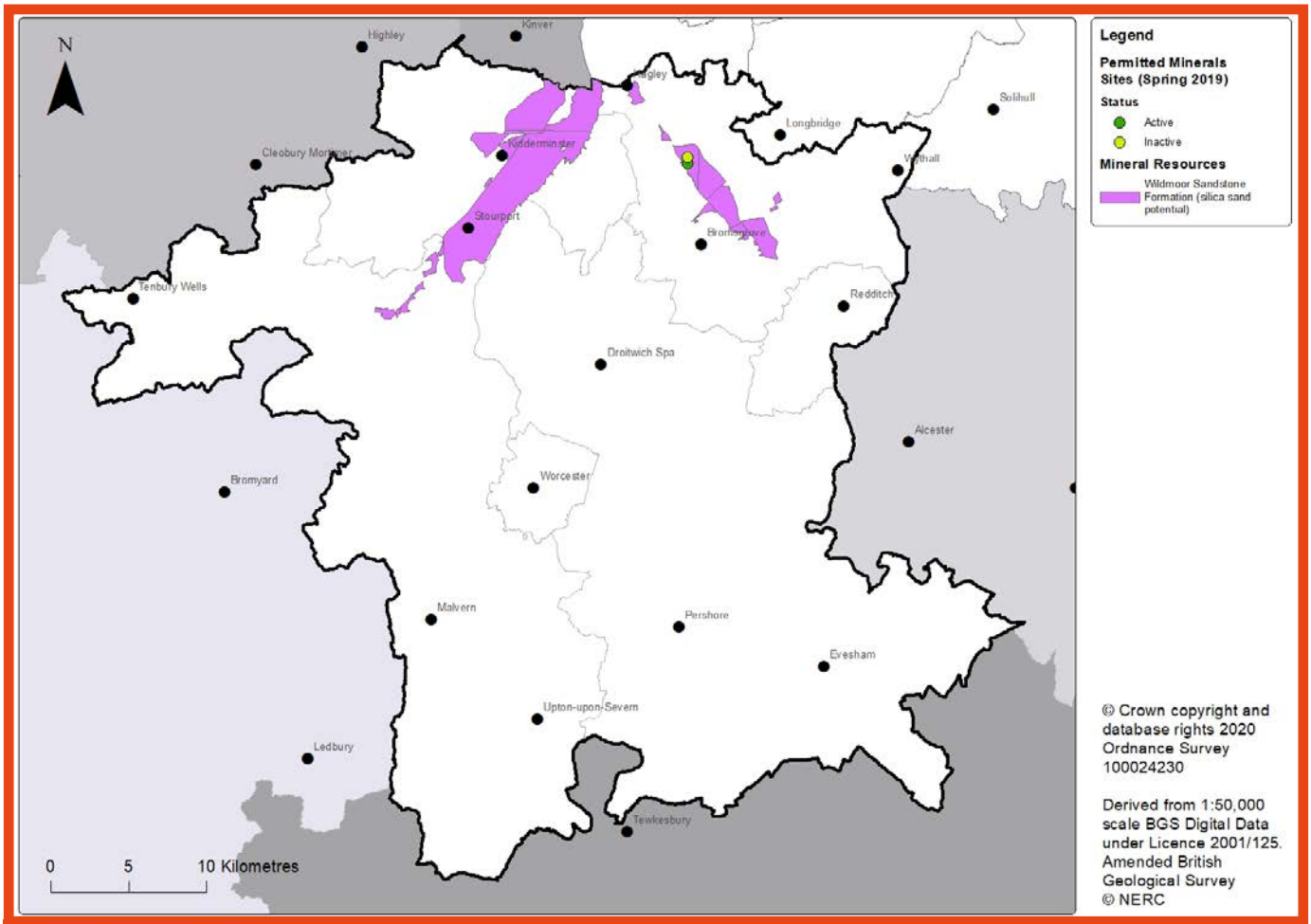
94 Some silica sand from Worcestershire was also sold for agricultural, horticultural, and leisure uses, but the exact quantities are unknown as the data was withheld to avoid disclosure of information relating to an individual undertaking without the consent of the person carrying on that undertaking. 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**.

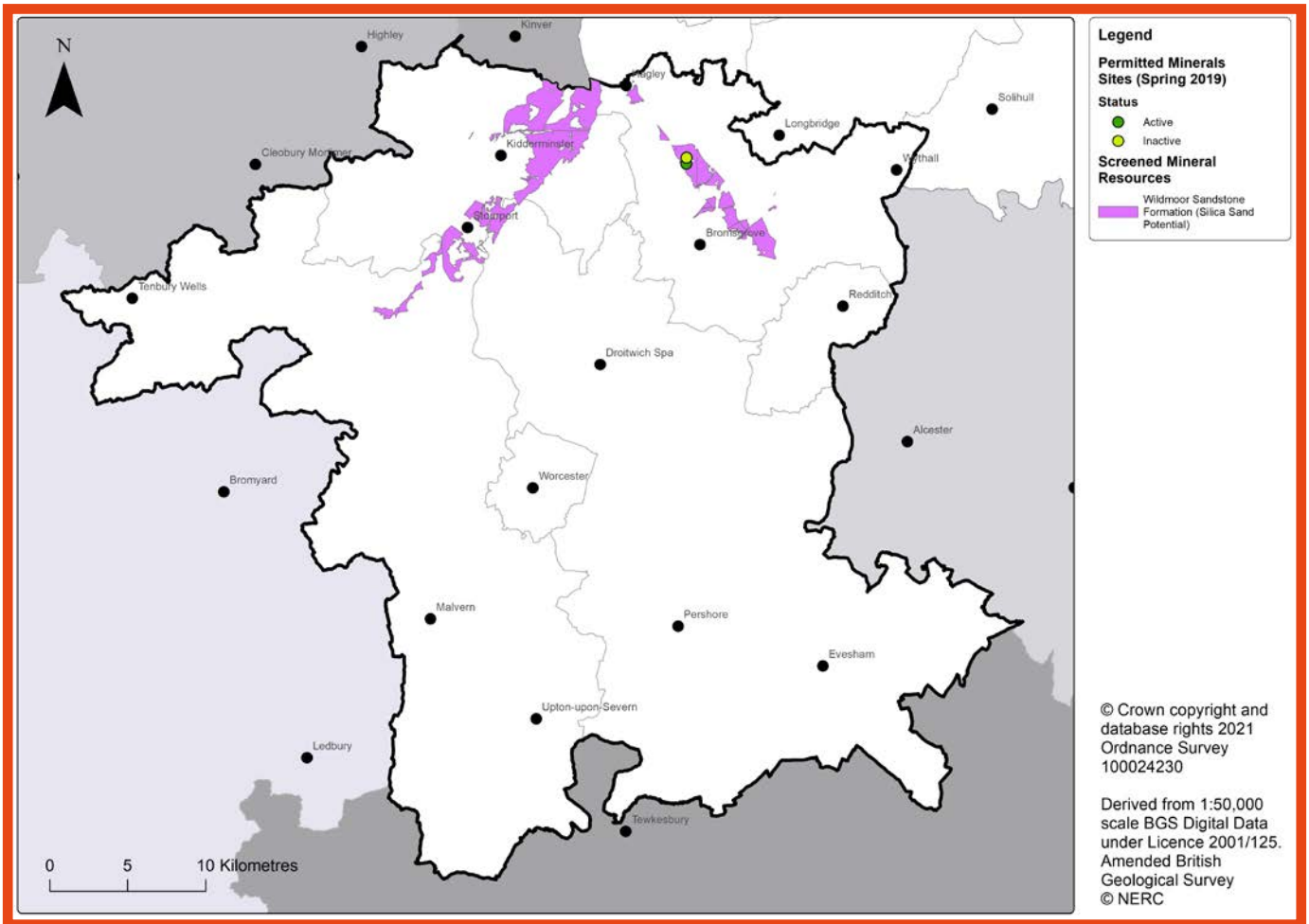
Figure 2.6a. Potential silica sand resources in the county (before the application of any screening criteria)[98]



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

98 Derived from 1:50,000 scale BGS digital data under Licence 2001/125.

Figure 2.6b. Potential silica sand resources in the county (after the application of screening criteria)[99]



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

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.[100] No information is available on whether any silica sand is imported into Worcestershire.

Future silica sand supply

2.49 64.5% of Worcestershire's silica sand (Wildmoor Sandstone Formation) resources are not affected by significant viability, environmental or amenity constraints.[101] These screened resources can be seen in Figure 2.6b.

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.

99 Figure 2.6b identifies the Wildmoor Sandstone Formation resources after viability, environmental and amenity screening criteria have been taken into account. 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 these silica sand resources might be within the Formation. For further information about the viability, environmental and amenity screening criteria, see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

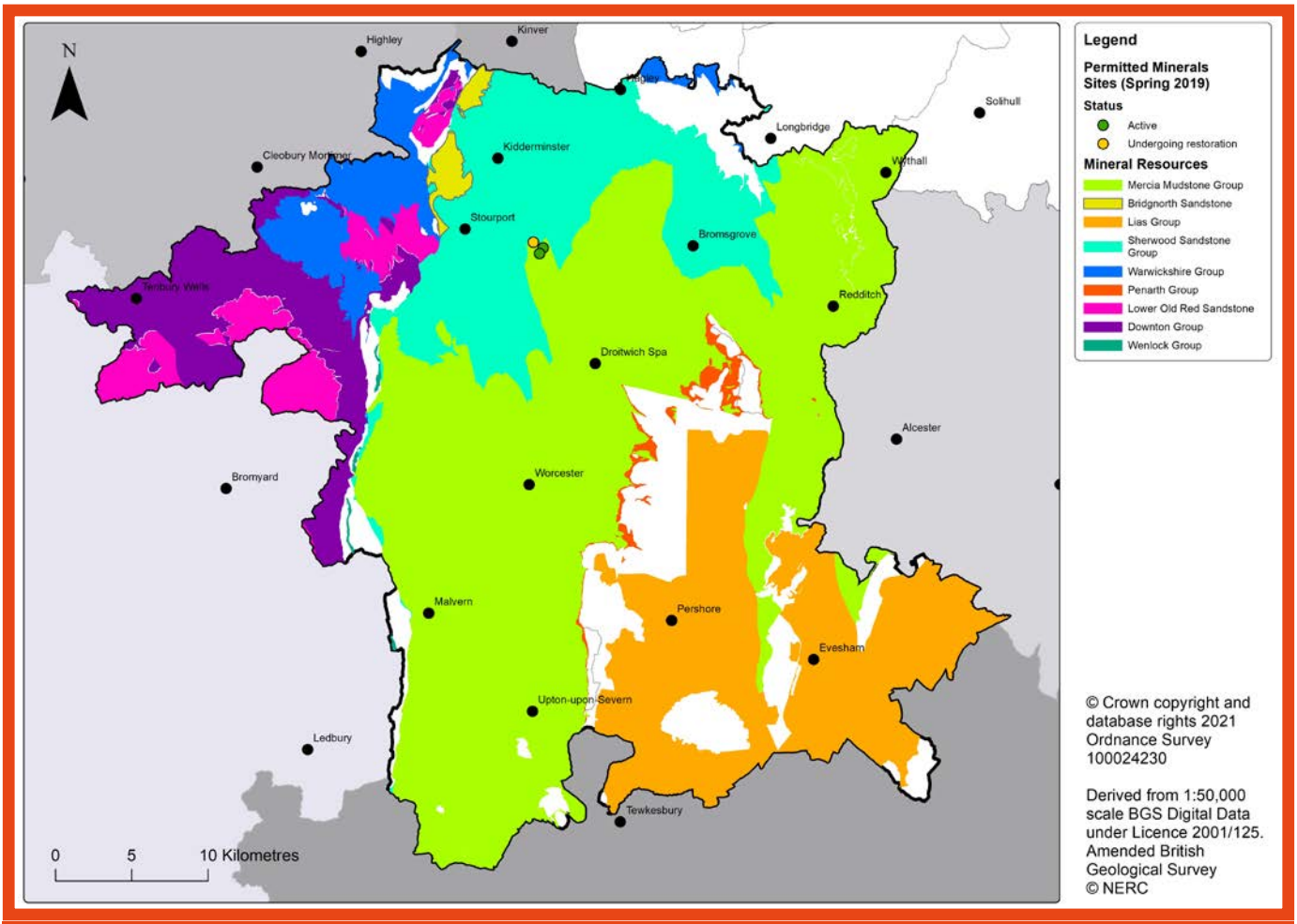
100 Department for Communities and Local Government (February 2013) *Mineral extraction in Great Britain 2011, Business Monitor PA1007* (Table 1 – Industrial sand)

101 By area (4,077 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**.

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.[102] The suitability of a clay for manufacturing structural clay products depends principally on its behaviour during shaping, drying and firing.[103]

Figure 2.7a. Potential brick clay resources in the county (before the application of any screening criteria)[104]



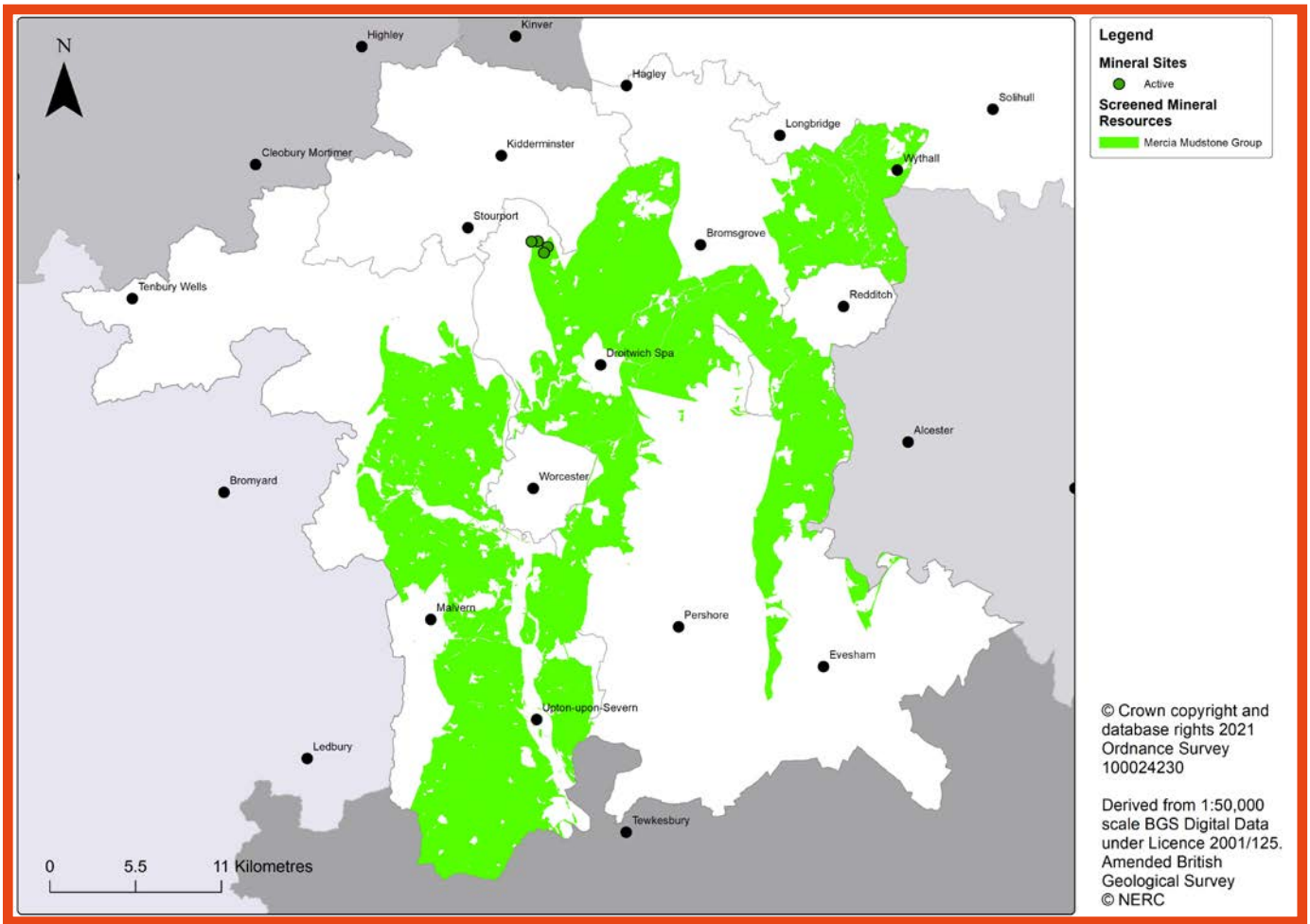
Note: An interactive minerals mapping tool is available at **www.worcestershire.gov.uk/minerals** to assist in the use and implementation of the Minerals Local Plan

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

103 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.*

104 Derived from 1:50,000 scale BGS digital data under Licence 2001/125.

Figure 2.7b. Potential brick clay resources in the county (after the application of screening criteria)[105]



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

2.52 There are nine different geological groups in Worcestershire that possess some clay properties,[106] 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.[107]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.[108] 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.[109]

105 Figure 2.7b identifies the Mercia Mudstone Group resources (derived from 1:50,000 scale BGS digital data under Licence 2001/125) after the application of screening criteria. For further information about the viability, environmental and amenity screening criteria, see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground. 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. 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. The suitability of clays for use in brickmaking in areas away from the current workings is largely unknown.

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

107 Worcestershire County Council (September 2018) *Clay in Worcestershire*, available at **www.worcestershire.gov.uk/mineralsbackground**.

108 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.*

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

2.54 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.

Sales and production of brick clay in Worcestershire

2.55 Mercia Mudstone is currently worked at two sites in Worcestershire, near Hartlebury, both of which have associated brick works.[110] 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.

2.56 Sales of brick clay from Worcestershire are approximately 126,000 tonnes per annum,[111] contributing approximately 3% to national supplies of clay for brick, pipes and tiles.[112]

Imports and exports

2.57 National import volumes of clay bricks increased six-fold between 2011 and 2014.[113] In 2015 the UK imported between 50,000 and 90,000 tonnes of bricks per month.[114] 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.

2.58 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.[115] The balance of imports and exports is likely to be due to requirements for bricks with different structural and aesthetic attributes.

2.59 It is likely that some clay is imported from other Mineral Planning Authority areas.[116] Blending different clays to improve durability and provide a range of colours and aesthetic qualities is an increasingly common feature of the brick industry.[117]

Future brick clay supply

2.60 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).[118] However the national impetus for additional homes may result in increased demand.

2.61 75.4% of Worcestershire's brick clay (Mercia Mudstone Group) resources are not affected by significant viability, environmental or amenity constraints.[119] These potential resources can be seen in Figure 2.7b.

2.62 Each of the clay workings in Worcestershire has a stock of permitted reserves sufficient for the life of the plan.[120] 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.

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

111 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.

112 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).

113 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/**

114 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.

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

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

117 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.*

118 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.

119 By area (55,364 55,367 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**.

120 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

2.63 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.[121] Concrete blocks, pipes and tiles are the main alternatives to clay products.[122] 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.

2.64 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.[123] 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

2.65 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.[124]

2.66 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.[125]

2.67 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.[126]

Sales and production of salt and brine

2.68 Brine is extracted on a small scale from one site in Droitwich.[127] This site formerly supplied a brine bath facility which closed in 2008[128] and now provides brine for the small-scale commercial production of edible salt.[129]

Imports and exports

2.69 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.[130]

Future salt supply

2.70 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.[131]

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

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

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 Brine was pumped in Tenbury Wells in the past.

126 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.*

127 Tower Hill Pump in Droitwich.

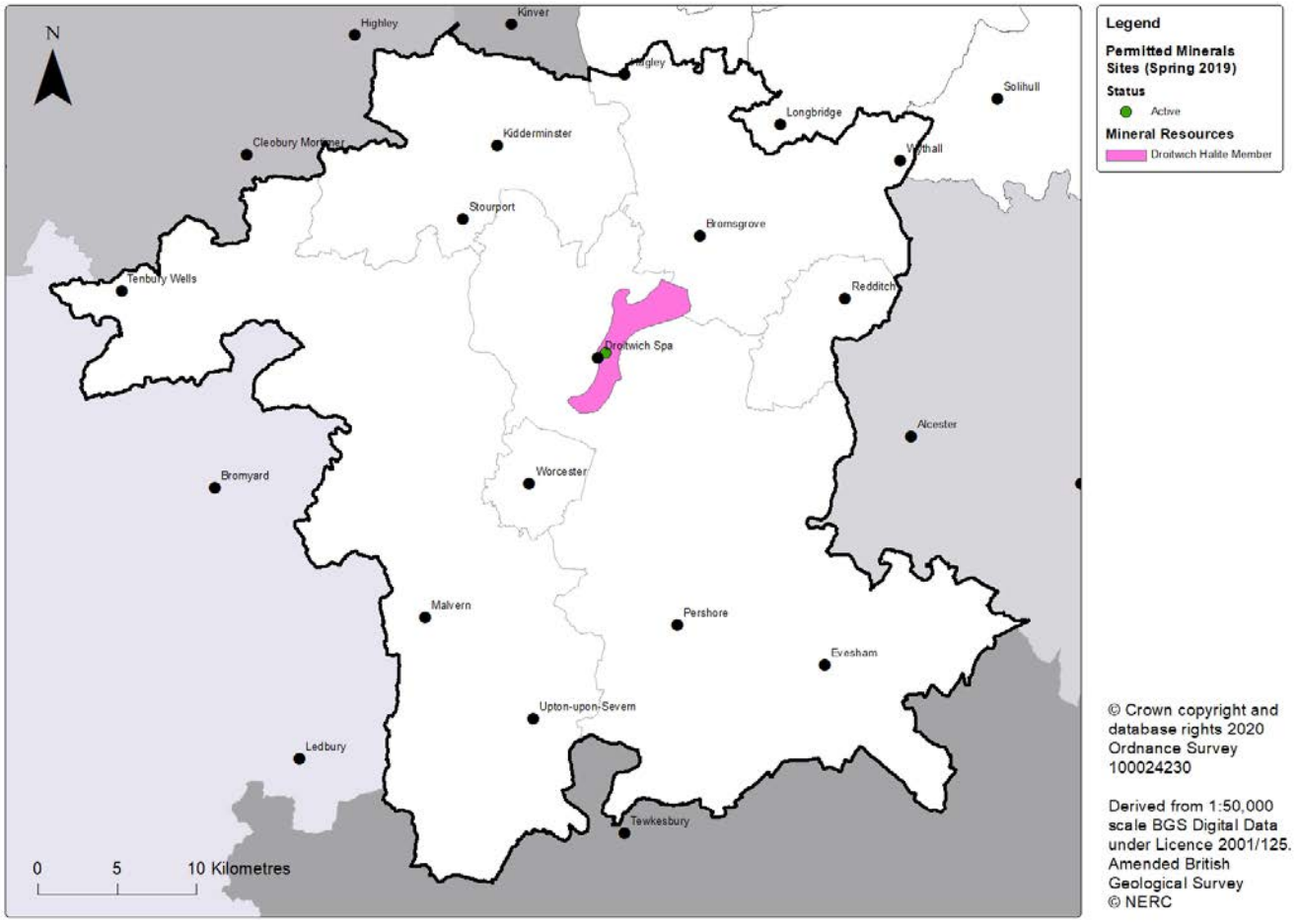
128 There is outline planning approval for a development including a brine bath adjacent to Droitwich Spa lido (Wychavon District Council planning application reference 17/02092/OUT)

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

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

131 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.*

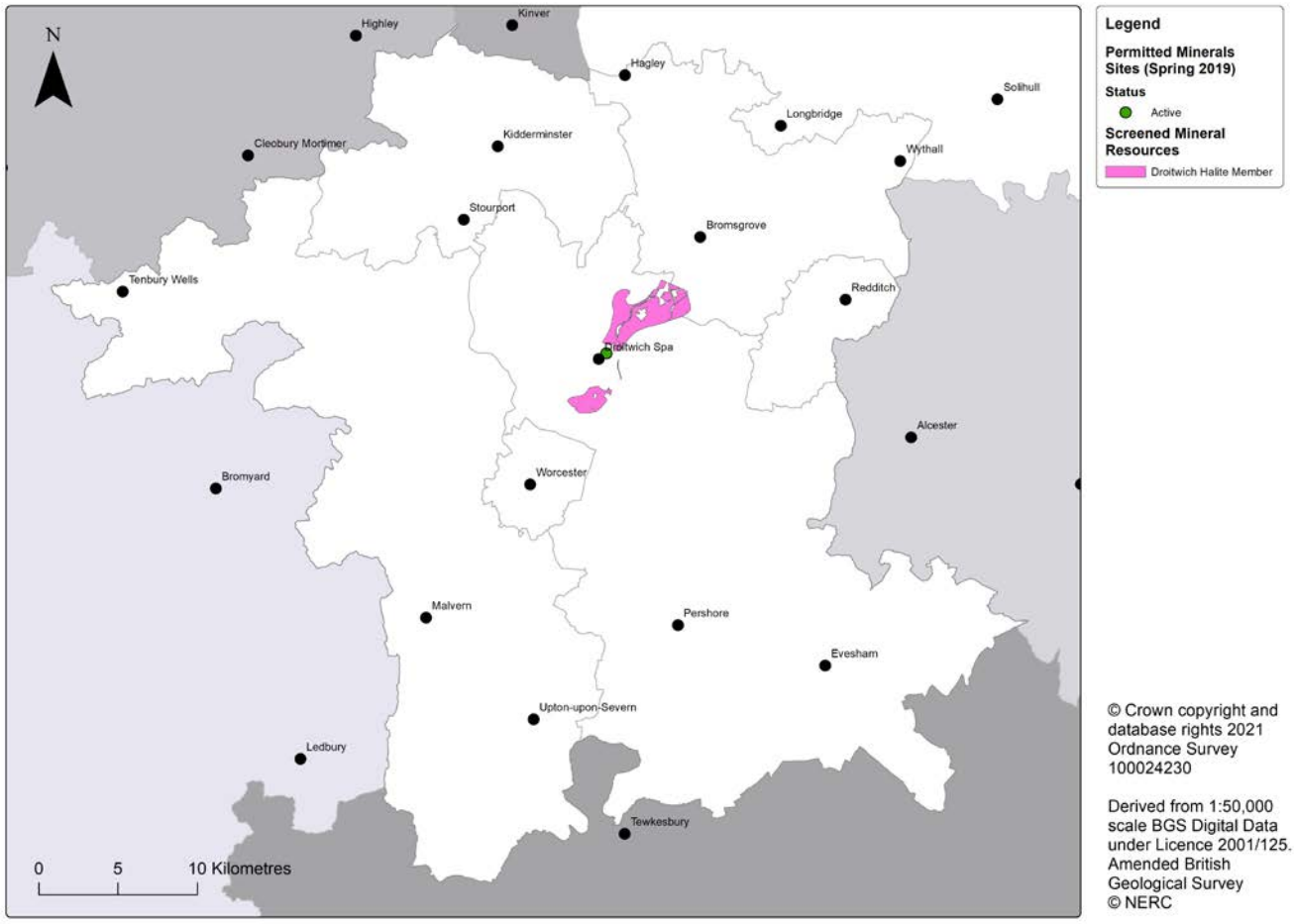
Figure 2.8a. Potential salt and brine resources in the county (before the application of any screening criteria)[132]



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

132 Derived from 1:50,000 scale BGS mapping digital data under Licence 2001/125.

Figure 2.8b. Potential salt and brine resources in the county (after the application of screening criteria)[133]



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

2.71 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,[134] 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.[135] This screened resource can be seen in Figure 2.8b.

Building stone[136]

2.72 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.[137] 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.

133 Figure 2.8b identifies the Droitwich Halite resources after viability, 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.

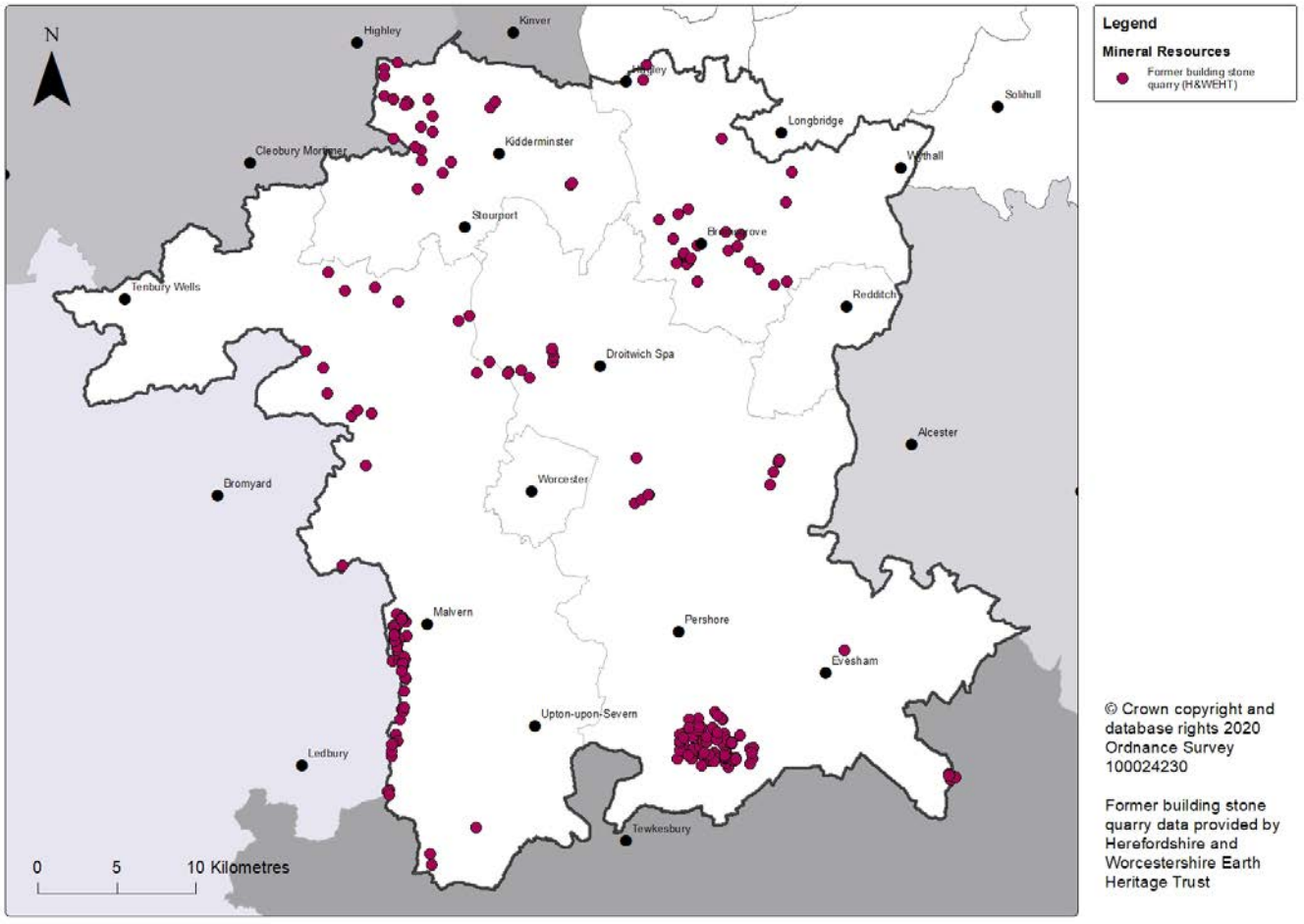
134 There is outline planning approval for a development including a brine bath adjacent to Droitwich Spa lido (Wychavon District Council planning application reference 17/02092/OUT).

135 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**.

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

137 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.

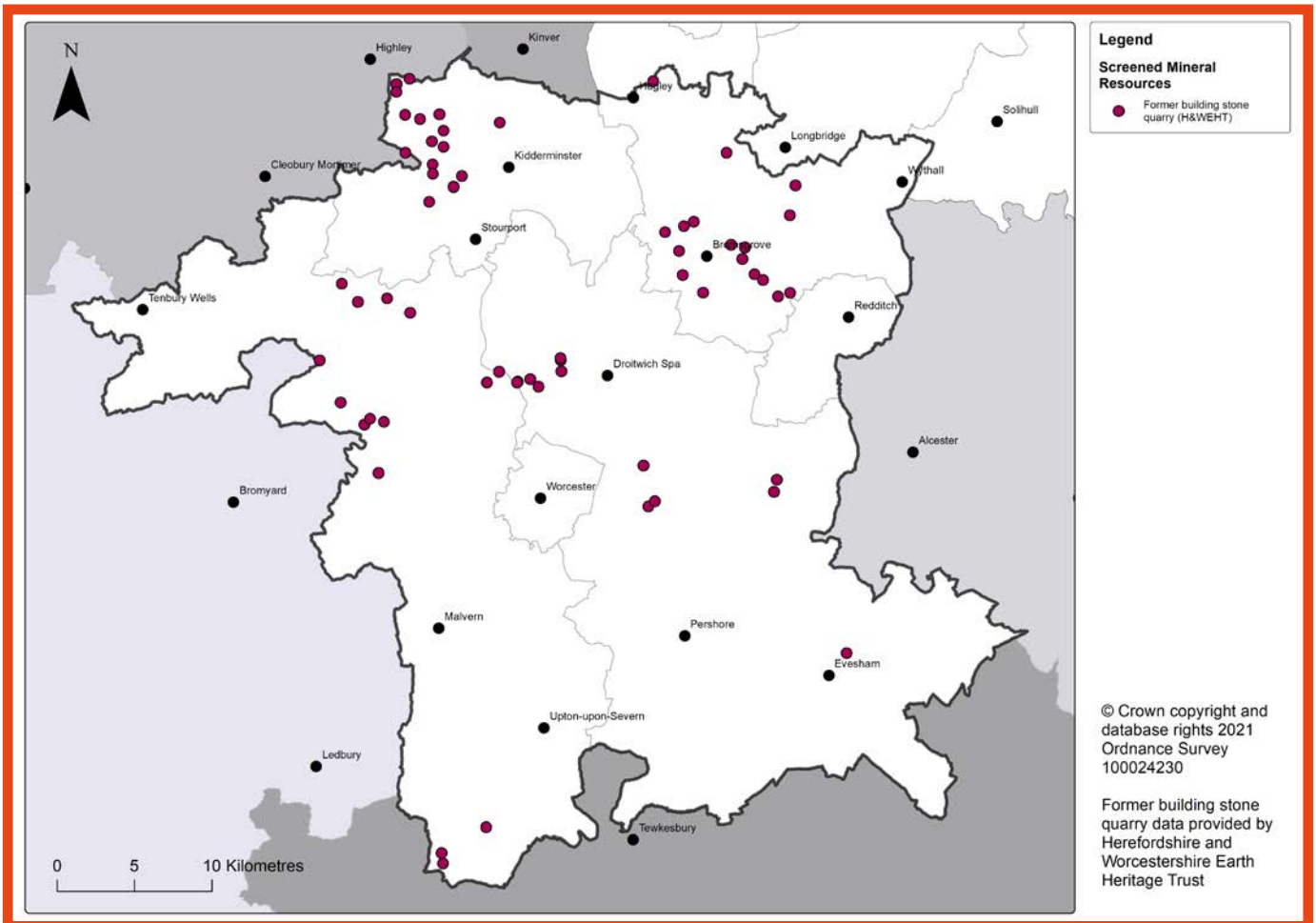
Figure 2.9a. Potential building stone resources in the county (before the application of any screening criteria)[138]



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

138 Figure 2.9a. identifies the former building stone quarries in the county identified by Herefordshire and Worcestershire Earth Heritage Trust's project *"A Thousand Years of Building with Stone"*.

Figure 2.9b. Potential building stone resources in the county (after the application of screening criteria)[139]



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

2.73 Granite, limestone, sandstone, tufa, breccias and quartz and quartzite pebbles have been worked historically for use as building stone,[140] and 233 former building stone quarries have been identified in Worcestershire.[141] 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 and 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.

Sales and production of building stone

2.74 Although a significant number of disused building stone quarries have been identified in the county,[142] there are currently no building stone workings or permitted reserves in Worcestershire.

Imports and exports

2.75 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.

139 Figure 2.9b. identifies the former building stone quarries identified by Herefordshire and Worcestershire Earth Heritage Trust's project *"A Thousand Years of Building with Stone"* after viability, 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.

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

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

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

Transporting sand and gravel on the River Severn

Future building stone supply

2.76 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.[143]

2.77 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.

2.78 27.9% of Worcestershire's former building stone quarries (identified by the Thousand Years of Building with Stone project)[144] are not affected by significant viability, environmental or amenity constraints.[145] These potential resources can be seen in Figure 2.9b.

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

2.79 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.[146] 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.

2.80 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.[147]

Energy minerals

2.81 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.[148] 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.

143 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.

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

145 By number (65 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**.

146 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.

147 Contact the Malvern Hills AONB Partnership for more information, **http://www.malvernhillsaonb.org.uk.**

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

2.82 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"[149] that is likely to attract further interest.[150]

2.83 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,[151] 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.[152]

Imports and exports

2.84 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

2.85 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.[153]

Worcestershire's transport network

2.86 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.

2.87 Aggregate minerals are bulky, relatively low-value materials that are expensive to transport and are not usually transported long distances from their source.[154] It is therefore important that aggregate workings are well located to serve planned housing and infrastructure development.

2.88 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.

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

2.90 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, therefore any imports and exports are solely reliant on the road network.

2.91 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 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).*

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

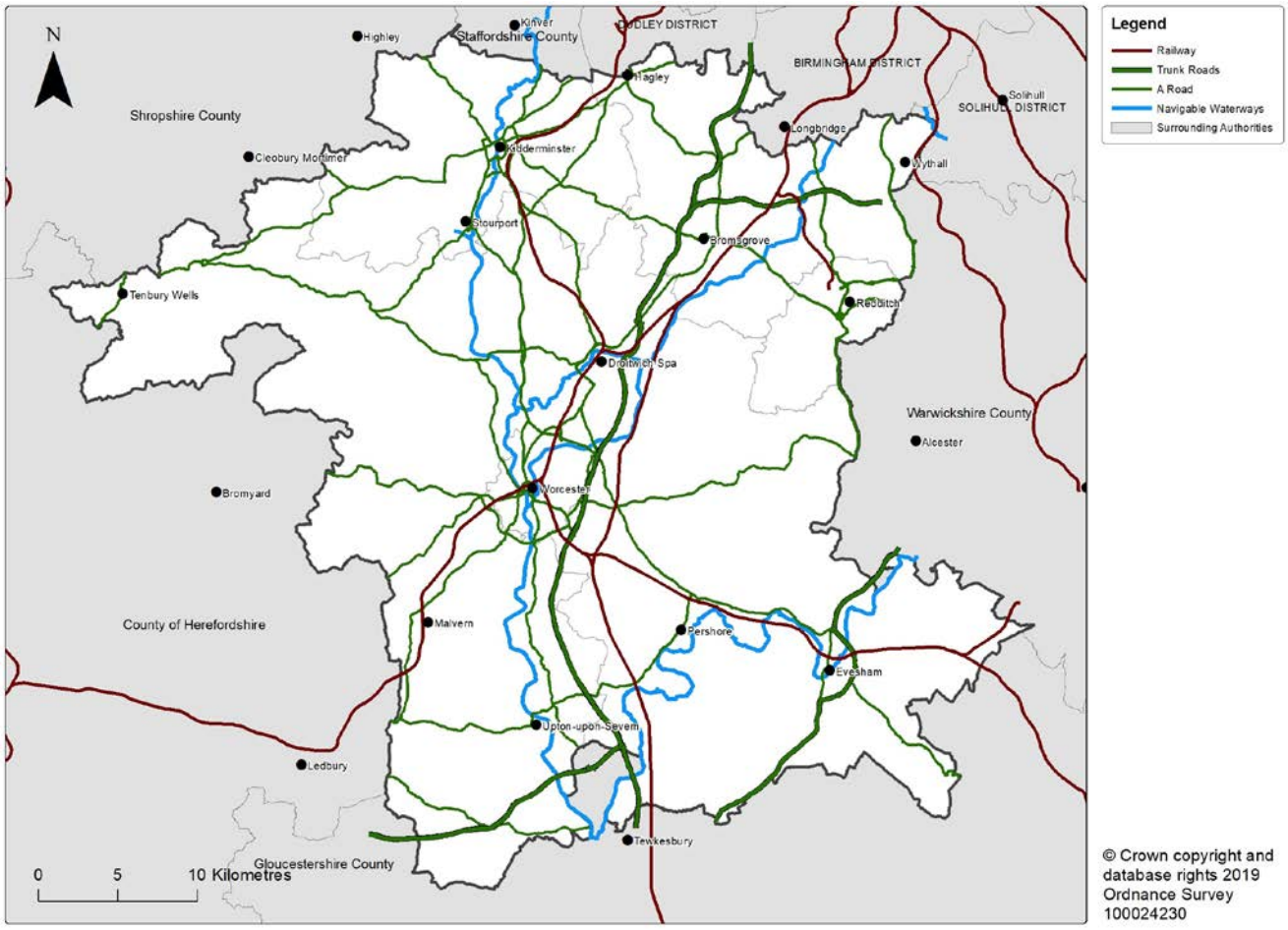
151 British Geological Survey and Department of the Environment, Transport and the Regions (1999) *Mineral Resource Information for Development Plans. Herefordshire and Worcestershire: Resources and Constraints.*

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

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

154 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



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

Water transport[155]

2.92 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.

2.93 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 Worcestershire[156] 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

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

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

Court Farm Quarry near Upton-upon-Severn.[157] These are the only commercial wharfage facilities in Worcestershire.

2.94 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.[158] In 2010, clay was transported from Birlingham to Pershore to build Environment Agency flood defences, showing the potential for minerals to be carried on the River Avon. There are 17 locks on the Avon between Tewkesbury and Stratford-upon-Avon, and the size of the lock gates at Tewkesbury means that smaller vessels are required than those used on the River Severn.

2.95 The Worcester & Birmingham Canal runs from the River Severn in Worcester to Birmingham and is used for leisure craft.[159] 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.[160]

2.96 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.[161]

Rail transport[162]

2.97 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.[163]

2.98 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.[164]

2.99 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 transport[165]

2.100 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.

2.101 The Worcestershire Advisory Lorry Route Map[166] 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.[167]

2.102 The majority of mineral movements in Worcestershire are by road, and even where minerals themselves could be transported by

157 Planning application reference 15/000012/CM.

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

159 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**).

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

161 For further information see **https://canalrivertrust.org.uk/enjoy-the-waterways/canal-and-river-network/droitwich-canals**.

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

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

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

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

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

167 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".

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.

Worcestershire's economy

2.103 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.

2.104 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 technologies[168] are identified as growth sectors alongside the visitor and destination economy.[169]

2.105 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.[170]

2.106 Agri-tech, horticulture and food production are strong economic sectors in Worcestershire due to high-quality soils[171] 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.[172] There is a significant cross-over between the location of mineral resources and high-quality agricultural land,[173] 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

2.107 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.

2.108 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.

2.109 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

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

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

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

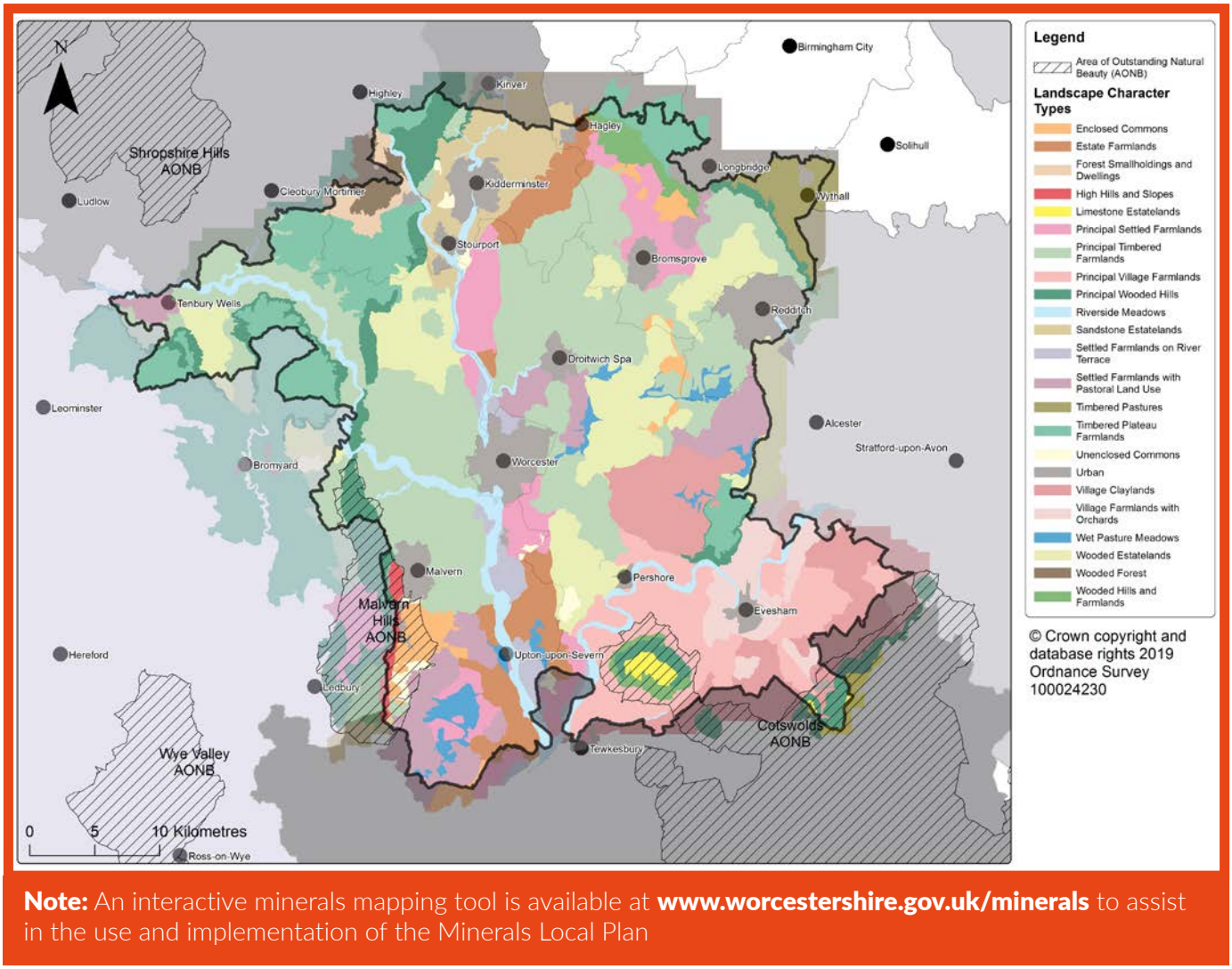
171 Worcestershire County Council (December 2011) *Technical Research Paper: Planning for Soils in Worcestershire.*

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

173 Ministry of Housing, Communities and Local Government (July 2021) *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

2.110 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[174].Worcestershire's landscape is one of the most diverse in Britain, with six National Character Areas[175] and 22 significantly different Landscape Types.[176] 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.

2.111 Parts of two Areas of Outstanding Natural Beauty (AONB) are within Worcestershire: the Malvern Hills AONB[177] which extends into Herefordshire and a small part of Gloucestershire; and the western extremity of the extensive Cotswolds AONB,[178] 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.

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

175 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**.

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

177 **http://www.malvernhillsaonb.org.uk/**

178 **https://www.cotswoldsaonb.org.uk/**

2.112 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.[179] 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.

2.113 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

2.114 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),[180] and over 540 Local Wildlife Sites in the county, which collectively cover approximately 5% of the county.[181]Worcestershire's Biodiversity Action Plan (BAP)[182] 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.[183] Some areas of land or watercourses within Worcestershire provide habitats that support migratory species of importance to the Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site.

2.115 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 Areas[184] across the county where targets within the Biodiversity Action Plan can be best delivered in the short term.

2.116 Mineral workings and their restoration can create significant opportunities for new habitats, sites and features of nature conservation value[185] although they also have the potential to destroy or degrade some habitats. It is estimated[186] that mineral sites nationally have the potential to deliver all the existing UK BAP habitat creation targets for nine[187] 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.[188]

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

180 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.

181 8,600ha.

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

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

184 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**.

185 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**.

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

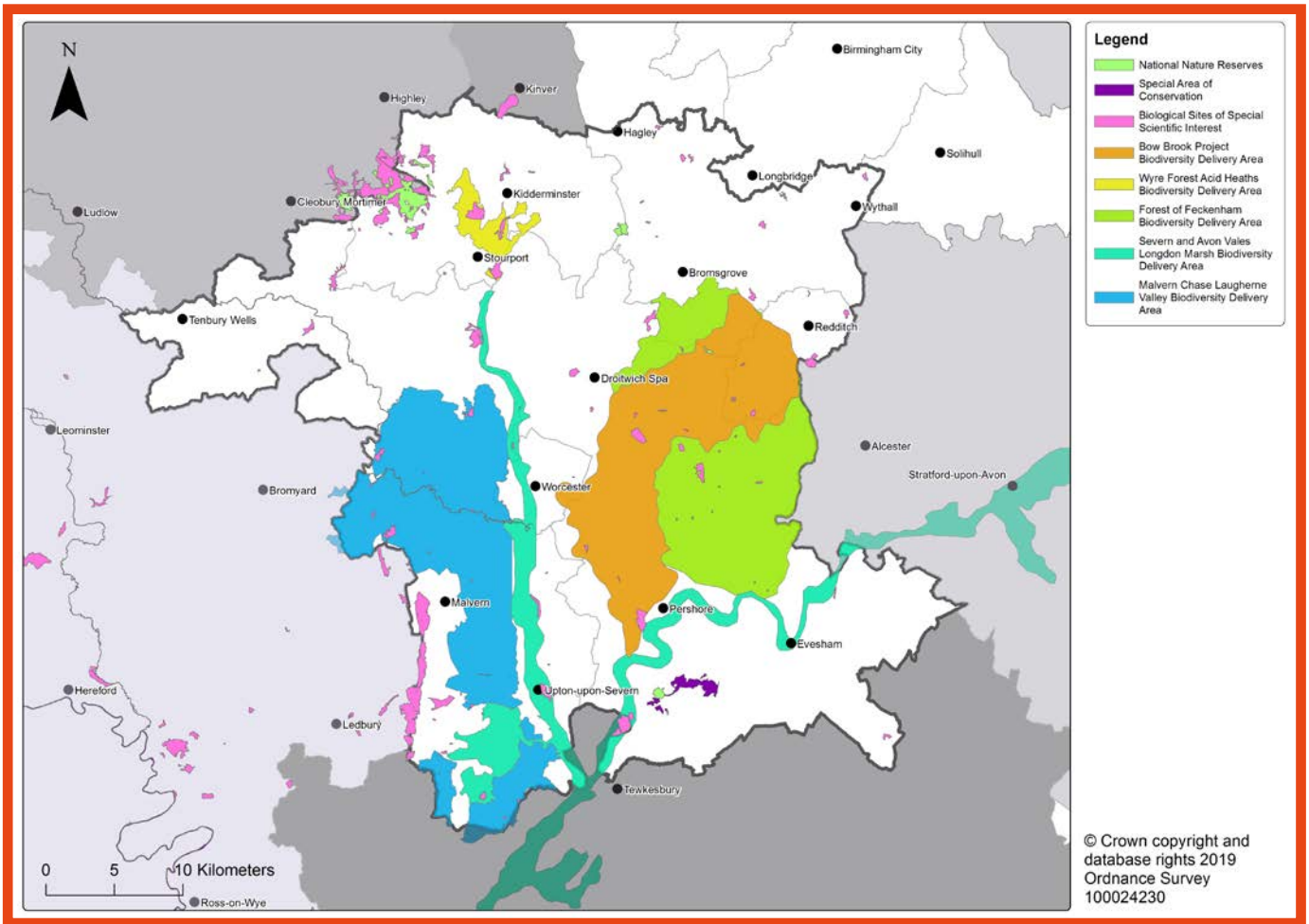
187 Lowland acid grassland, Native Woodland, Wood pasture and parkland, Lowland calcareous grassland, lowland heathland, Purple moor grass and rush pasture, Wet reedbeds, Lowland meadows, Upland hay meadows.

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

Kemerton Lake Nature Reserve, former sand and gravel quarry

2.117 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.[189] 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.

Figure 2.12. Biodiversity in Worcestershire

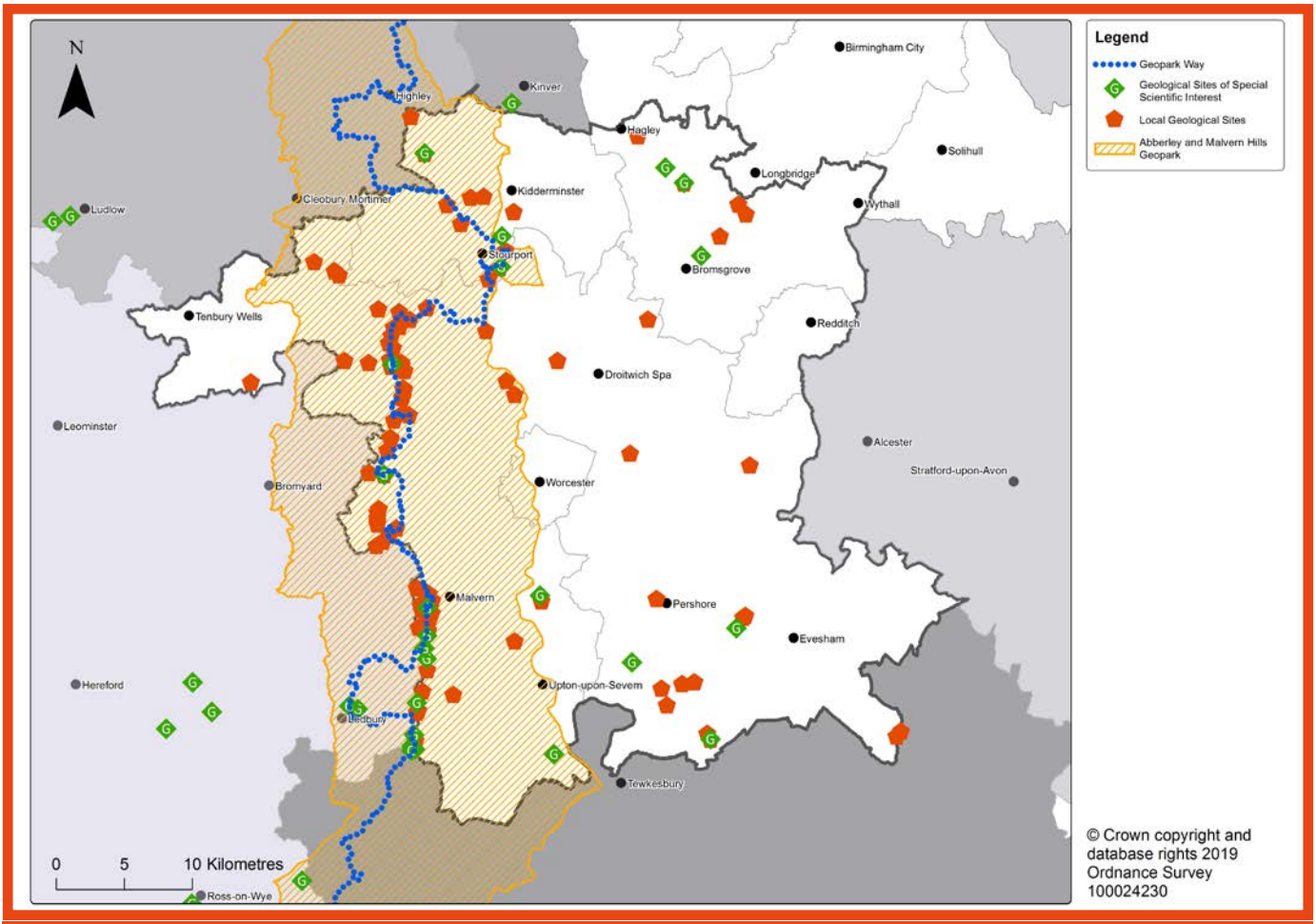


Note: An interactive minerals mapping tool is available at **www.worcestershire.gov.uk/minerals** to assist in the use and implementation of the Minerals Local Plan

189 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.

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

2.118 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.[190]

2.119 There are 14 geological SSSIs[191] 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.[192]

2.120 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.[193]

190 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.

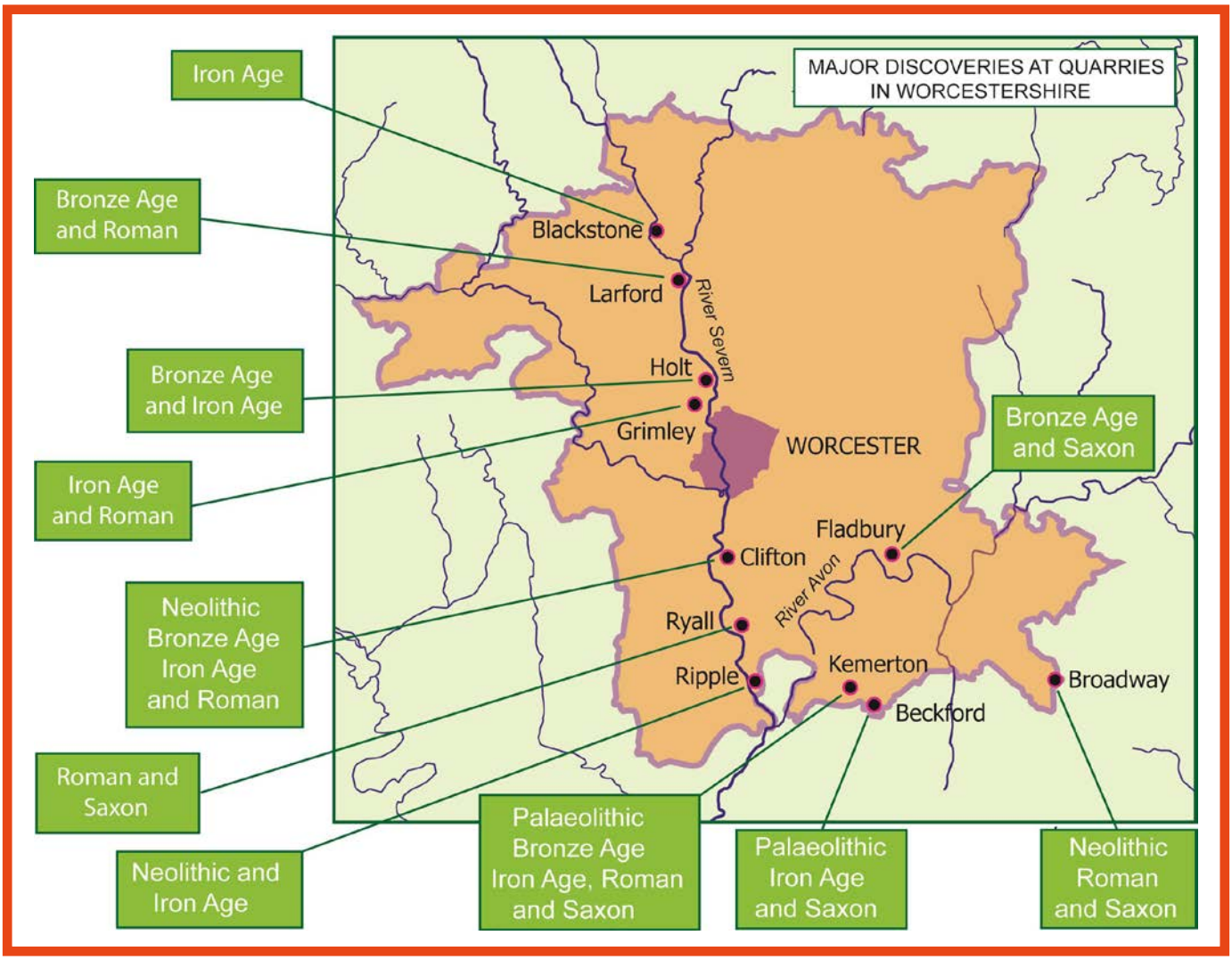
191 Of the 113 SSSIs in Worcestershire, 99 are biological SSSIs, 10 are geological, and four are both biological and geological.

192 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**.

193 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 Worcestershire[194]



2.121 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 assets[195] are recorded on the county's Historic Environment Record.[196] The Historic Environment Record represents all aspects of Worcestershire's archaeology and historic environment, including archaeological sites, historic buildings, monuments and landscape features.

2.122 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.

2.123 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,

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

195 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.

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

has a substantial assemblage of prehistoric,[197] 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.

2.124 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.[198]

2.125 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.

2.126 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

2.127 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

2.128 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.

2.129 The majority of flood events in recent years have been caused by intense rainfall leading to surface water run-off and ordinary watercourse flooding.[199]

2.130 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.[200]

2.131 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.[201] 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.

197 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**.

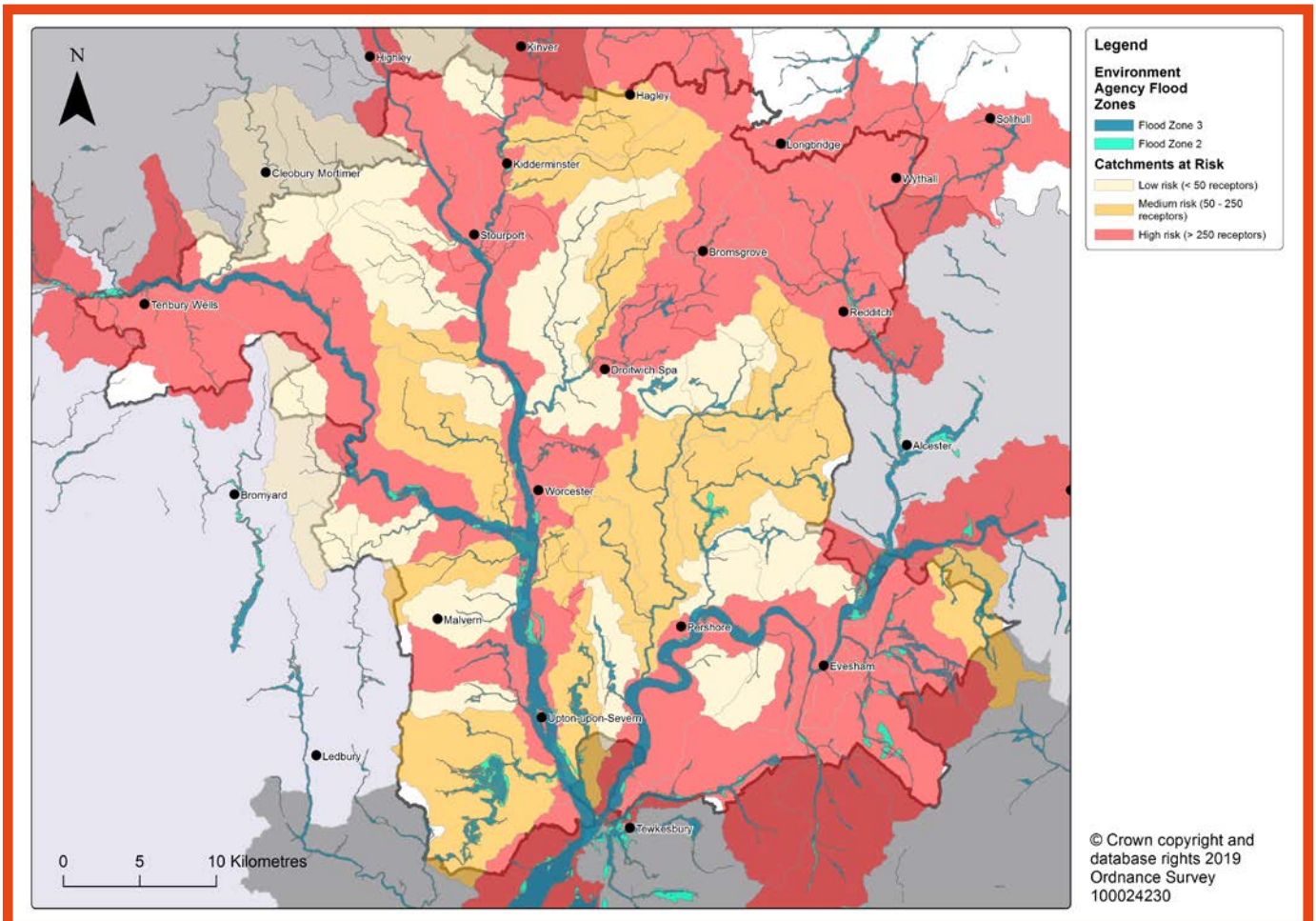
198 Historic England (April 2015) *Facing the Future: Foresight and the Historic Environment* (Paragraph 3.4.6).

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

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

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

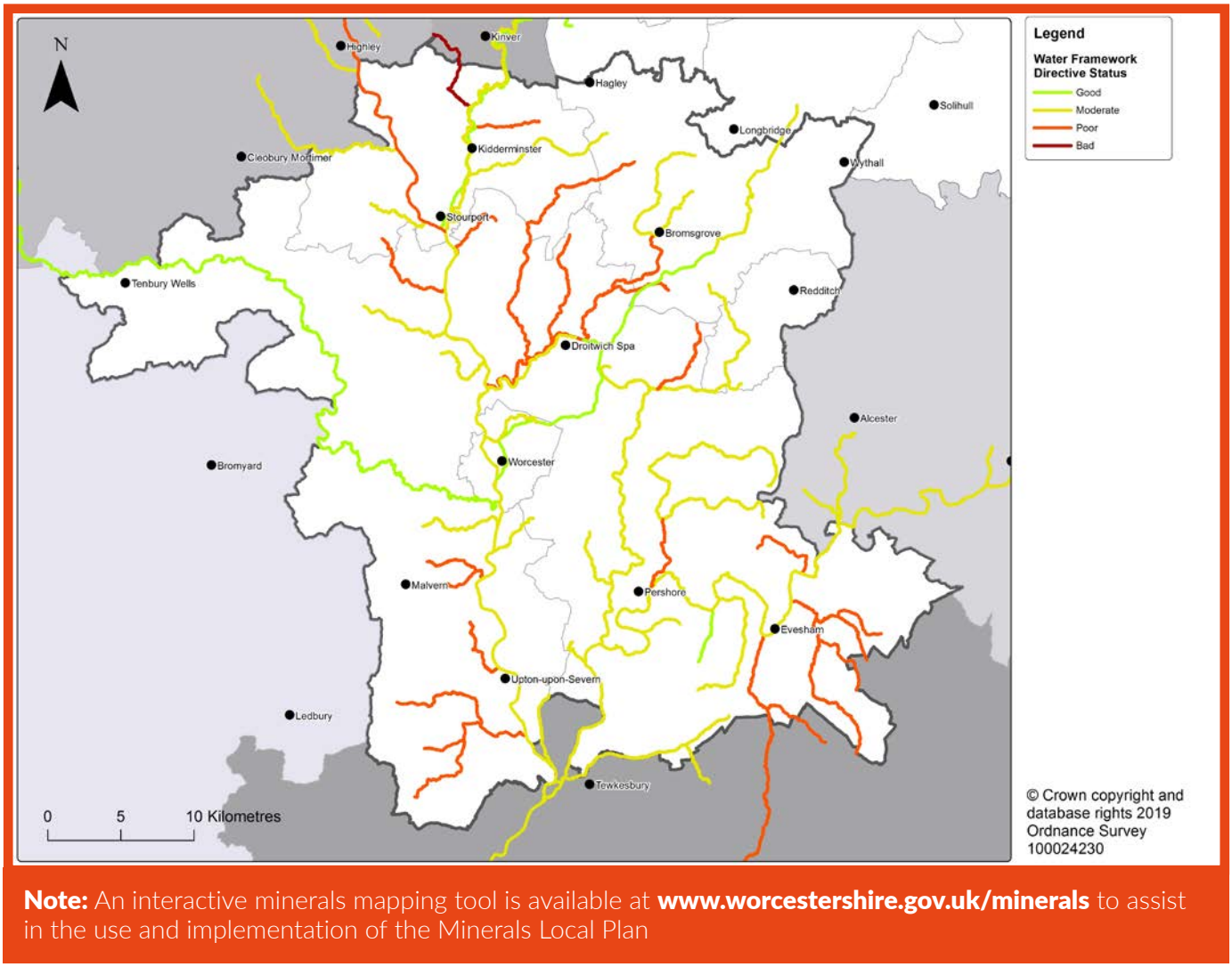
Figure 2.15. Flood risk in Worcestershire[202]



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

202 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**.

Figure 2.16. Water quality in Worcestershire[203]



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

2.132 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.

2.133 The EU Water Framework Directive (WFD) requires all surface and ground waters to reach "good ecological" status (or potential, in the case of Artifical or Heavily Modified Waterbodies) by 2027.[204] Most of Worcestershire's waterbodies are not currently meeting this requirement.[205]

2.134 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.[206]

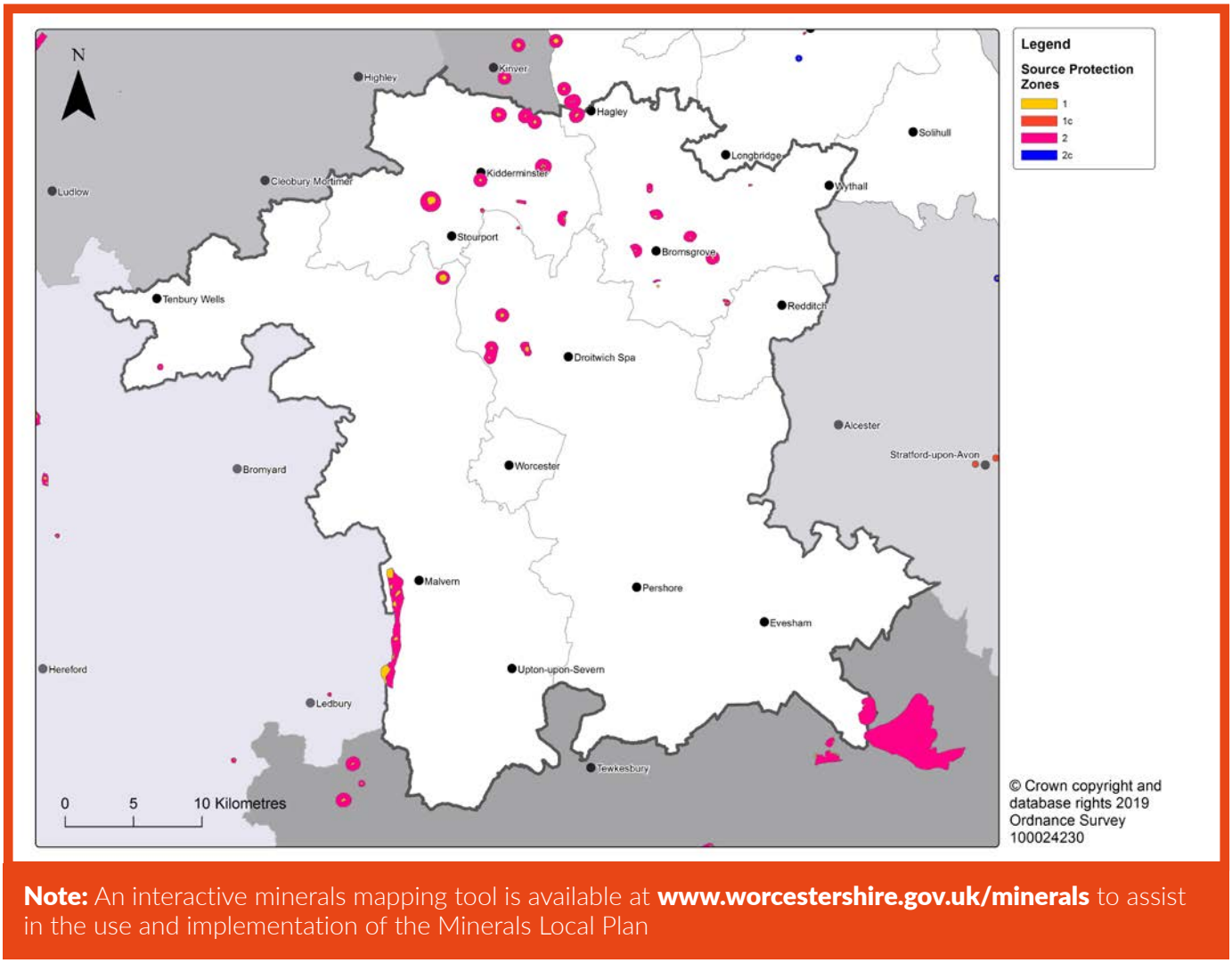
203 Water Framework Directive Status data provided by the Environment Agency, summer 2018. The latest Environment Agency data should be referred to, see https://environment.data.gov.uk/catchment-planning/.

204 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.

205 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/**.

206 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



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

2.135 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.[207]

2.136 As well as providing base flows to watercourses and water bodies, groundwater provides a significant proportion (30%) of the public water supply in England.[208] 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.[209] 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.

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

208 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**.

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

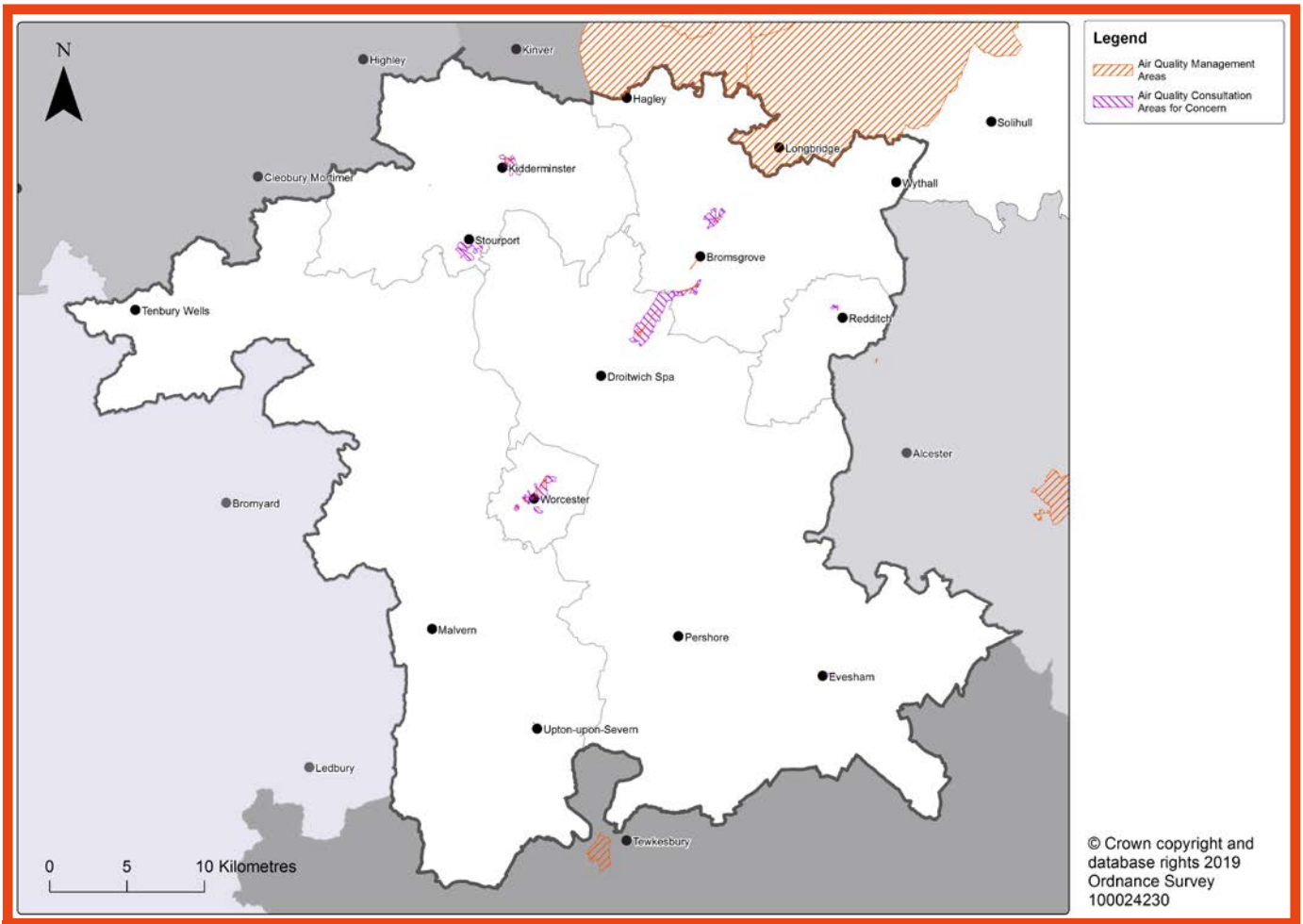
Flooding around Upton upon Severn

2.137 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.

2.138 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 increasing 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

2.139 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.[210] Elevations in air pollution can cause lung irritation and exacerbate lung and heart conditions.[211] Nitrogen dioxide (NO_2) and ground level ozone (O_3) from vehicles and chimneys can also have similar impacts.

2.140 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 (AQMAs).[212]

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

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

212 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

2.141 Overall health in Worcestershire is better than the England average.[213] However there is evidence of mental ill-health in the county, and recorded diabetes is significantly higher in Worcestershire than the England average.[214] 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.[215] Both locally and nationally there is also a high health burden from conditions which are linked to patterns of behaviour, including sedentary lifestyles.[216]

2.142 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

2.143 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.[217] Measures which help to increase everyday physical activity as part of daily routines can be low or no cost options for improving health and well-being which result in long-lasting behaviour change.[218]

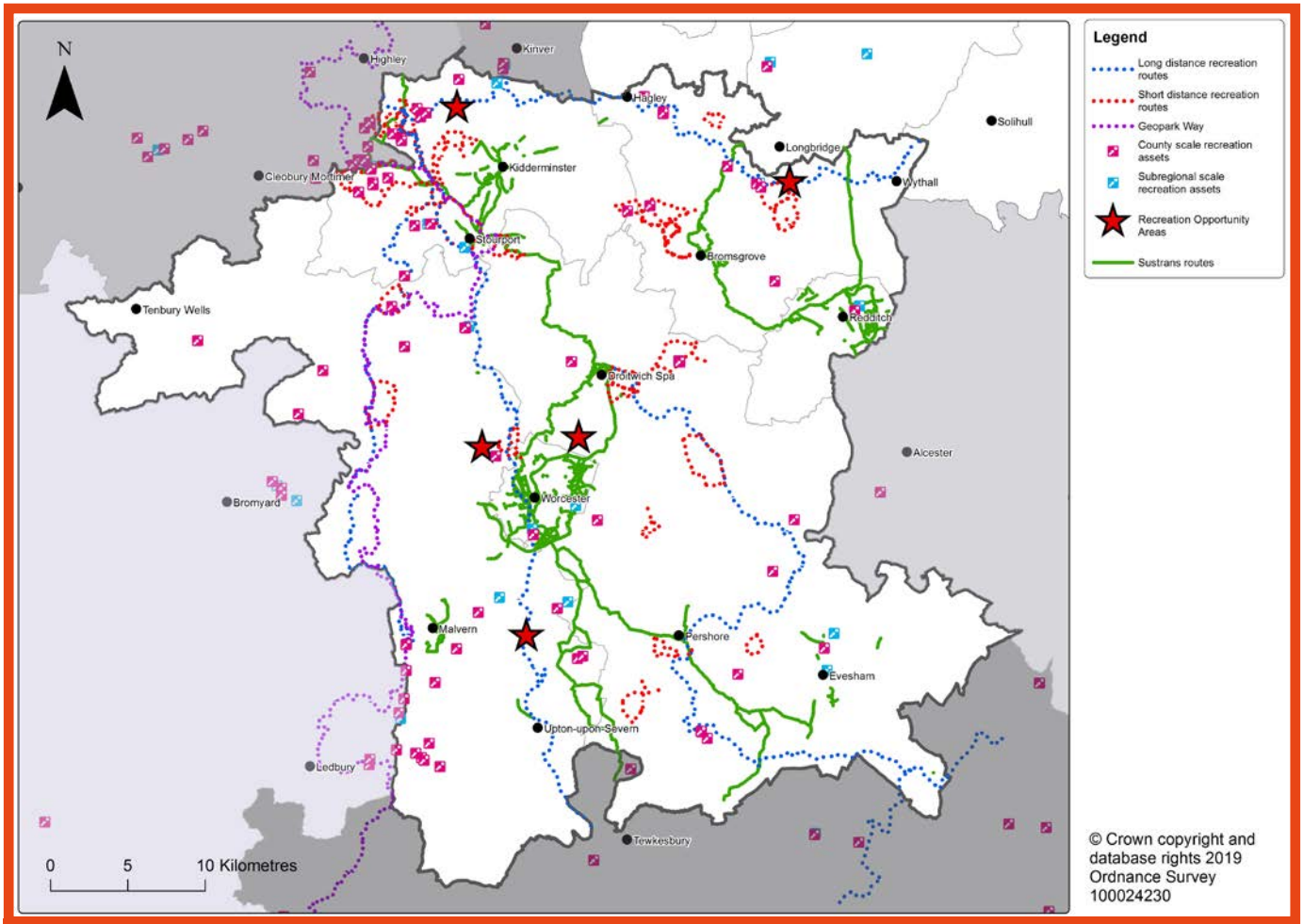
2.144 In Worcestershire, there are over 4,600km of public rights of way[219] and over 11,750 hectares of free-to-access natural green spaces.[220] These consist of country parks, short way-marked trails, circular walks and other public rights of way. There are also five long-distance recreation routes 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 sites[221] in the Wyre Forest, and in the Lickey, Clent and Malvern Hills.

2.145 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.

2.146 The condition of footpaths in the county is generally good, but the network of bridleways and cycle routes tends to be more fragmented.[222] The proportion of households in the county with good access to county-scale and sub-regional-scale[223] 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.

213 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**.
214 Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper.*
215 Worcestershire County Council (September 2014) *Green Infrastructure Framework 4: Socioeconomic Benefits of Green Infrastructure*, **www.worcestershire.gov.uk/GI**.
216 Worcestershire County Council (2015) *Planning for Health in Worcestershire Technical Research Paper.*
217 Worcestershire County Council (September 2014) *Green Infrastructure Framework 4: Socioeconomic Benefits of Green Infrastructure*, **www.worcestershire.gov.uk/GI**.
218 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**.
219 Including cycle paths, permissive routes, canal towpaths and other similar infrastructure. Worcestershire County Council (2007) *Rights of Way Improvement Plan.*
220 Worcestershire County Council (September 2014) *Green Infrastructure Framework 3: Access and Recreation*, **www.worcestershire.gov.uk/GI**.
221 Sites that are 100ha or larger, as defined by the Accessible Natural Greenspace Standard developed by Natural England.
222 Including cycle paths, permissive routes, canal towpaths and other similar infrastructure. Worcestershire County Council (2007) *Rights of Way Improvement Plan.*
223 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



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

2.147 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.[224] 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.[225]

2.148 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.

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

225 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 2036. 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 promote a sustainable pattern of development that seeks to meet the development needs of the county. The strategic policies in the plan should provide for objectively assessed needs to be met[226] 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.[227]

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,[228] the findings of statutory and non-statutory assessments,[229] and the outcomes of stakeholder engagement and public consultation.

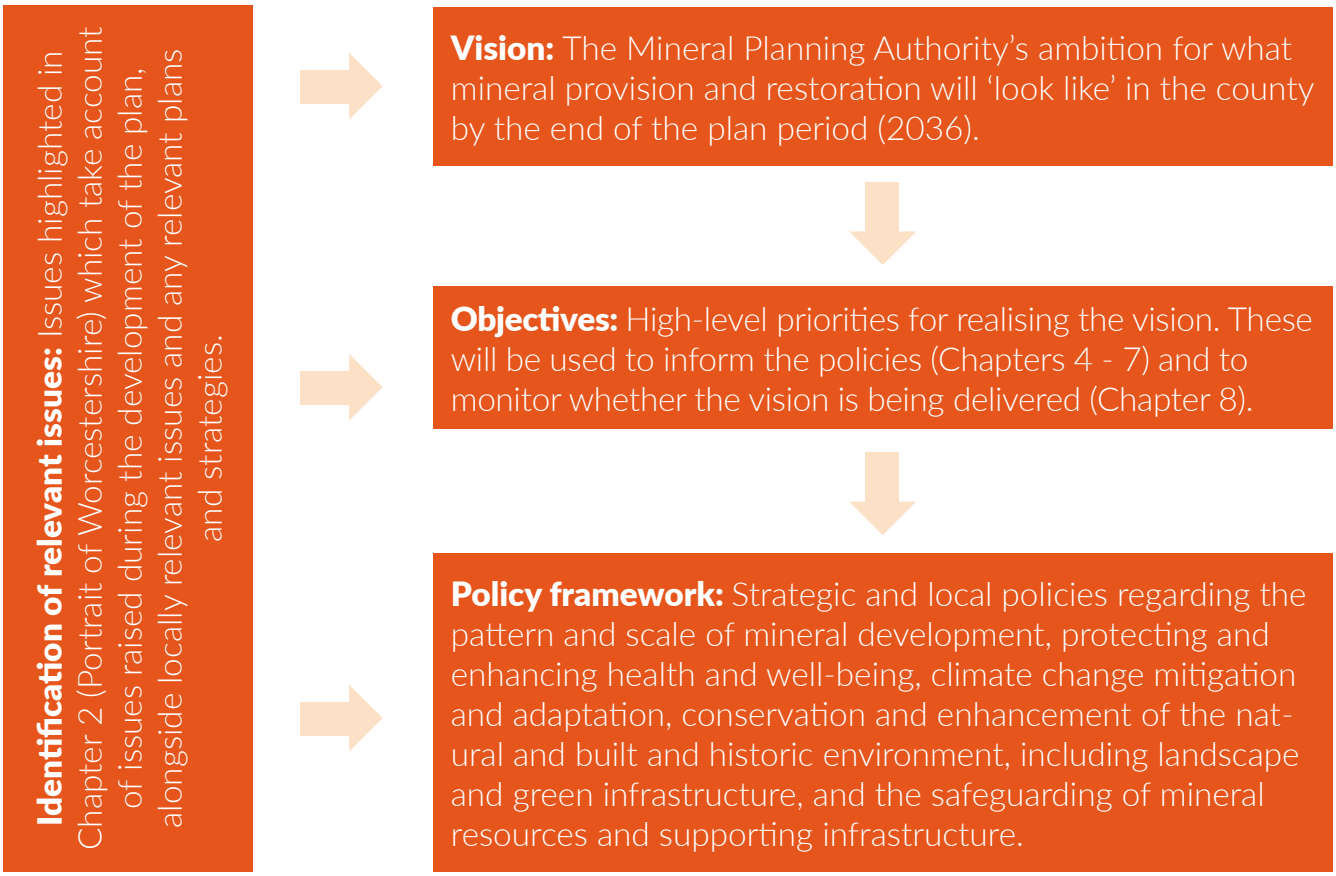
226 *The National Planning Policy Framework* also requires strategic plans (Local Plans that contain policies to address the strategic priorities of an area) to provide for any needs that cannot be met within neighbouring areas, as established through Statements of Common Ground. Through the constructive, 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.

227 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 11.

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

229 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 Assesment 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.[230]

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.

Improving understanding of geology, Broadway Quarry, near Fish Hill

230 Ministry of Housing, Communities and Local Government (July 2021) *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 needs [231] to 2036 and beyond, considering:

- » the contribution of substitute, secondary and recycled materials and mineral waste to overall supply;[232]
- » the current landbank of permitted reserves of sand and gravel; and
- » the constraints on delivering crushed rock supply over the life of the plan.[233]

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 networks [234] 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.[235] As green infrastructure is multifunctional, it offers a cost-effective way to maximise gains across the components[236] 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 county [237] 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.

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

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

233 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**

234 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.

235 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*.

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

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

A vision for the winning, working and lasting legacy of minerals development in Worcestershire to 2036 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 efficient 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 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)

Policy MLP 1: Spatial Strategy

Contributing to:

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

a) For most types of mineral, the majority of development over the life of the plan will be located in the Avon and Carrant Brook, Lower Severn, North East Worcestershire, North West Worcestershire and Salwarpe Tributaries Strategic Corridors:

   i. Development for sand and gravel, silica sand and brick clay will be supported within the strategic corridors and will not normally be supported elsewhere in the county.

   ii. Development for building stone will be supported within the strategic corridors, but may also be supported elsewhere within the county.

   iii. Development for salt/brine or other industrial minerals will be supported within the strategic corridors, but may also be supported elsewhere within the county.

b) Crushed rock development will be supported throughout the county.

c) Proposals for on-shore oil and gas development will only be supported in any areas licensed by Government for oil and gas exploration or production in future licensing rounds.

Reasoned justification

4.1 To serve market demand for mineral resources in and around Worcestershire and to support the local and wider economy, five strategic corridors are identified in Figure 4.1 (Key Diagram).[238] These are the Avon and Carrant Brook Strategic Corridor, the Lower Severn Strategic Corridor, the North East Worcestershire Strategic Corridor, the North West Strategic Corridor and the Salwarpe Tributaries Strategic Corridor.

Distribution of mineral resources

4.2 The identification of the strategic corridors has been informed by the distribution of the mineral resources which are found in Worcestershire.

4.3 The distribution of sand and gravel, silica sand and brick clay resources has been instrumental in defining the strategic corridors. The strategic corridors are the areas in the county where there are the greatest concentrations of sand and gravel, silica sand, and brick clay resources which are not affected by significant viability, environmental and amenity constraints[239]:

- Terrace and glacial sand and gravel resources in Worcestershire are found extensively across the five strategic corridors;
- Solid sand resources are found extensively within the North East Worcestershire and North West Worcestershire Strategic Corridors;
- Wildmoor Sandstone Formation deposits which contain silica sand resources are found extensively within the North East Worcestershire and North West Worcestershire Strategic Corridors; and
- Mercia Mudstone Group deposits which contain brick clay resources are found extensively within the Salwarpe Tributaries Strategic Corridor and the Lower Severn Strategic Corridor, and to a lesser extent within the Avon and Carrant Brook Strategic Corridor and the North East Worcestershire Strategic Corridor.

4.4 The distribution of crushed rock has not been instrumental in defining the strategic corridors due to the viability, environmental and amenity constraints on the resources in the county[240]. Crushed rock resources do not occur within the strategic corridors, and any crushed rock development will therefore necessarily be located outside the strategic corridors.

4.5 The distribution of building stone has not been instrumental in defining the strategic corridors, but the North East Worcestershire, North West Worcestershire and Salwarpe Tributaries Strategic Corridors do contain some building stone resources[241].

4.6 The presence and distribution of other industrial mineral deposits have not been instrumental in defining the strategic corridors due to a lack of geological information, or due to lack of market information to indicate that working of other minerals would be viable in Worcestershire. Although the Salwarpe Tributaries Strategic Corridor does contain Droitwich Halite Member (rock salt) resources, there is very little information regarding the location and extent of the associated brine resources due to the complex hydrology of the area.

4.7 The distribution of energy minerals was not instrumental in defining the strategic corridors as there are no commercially viable coal resources and no known oil or gas resources in Worcestershire.

Coordinated mineral development

4.8 The strategic corridors are well located to serve planned housing and infrastructure development[242] and are connected to the strategic transport network. 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. The characteristics of each corridor are set out later in this chapter, starting at paragraph 4.82.

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

239 See Chapter 2 (Portrait of Worcestershire) section on Worcestershire's mineral resources.

240 See Chapter 2 (Portrait of Worcestershire) section on Worcestershire's mineral resources.

241 Former building stone quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone*.

242 The Second Stage Consultation on the Minerals Local Plan mapped areas of market demand to identify where mineral resources in Worcestershire were: a) within 15km of settlements where 1,500 homes or more were proposed over the plan period; b) within 10km of settlements where 750 – 1,500 homes were proposed over the plan period; and c) within 5km of settlements where 250 – 750 homes were proposed over the plan period. The location of all of the strategic corridors (at that time known as areas of search) meant that they were well placed serve at least three or more of the identified market demand areas. Each of the corridors also has access to the strategic transport network to facilitate the transport and distribution of mineral products.

4.9 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. Concentrating mineral development in the strategic corridors will enable a co-ordinated approach to the working and restoration of mineral sites, giving greater opportunities to deliver integrated social, economic and environmental gains than if sites are considered in isolation. The character and distinctiveness of each of the strategic corridors sets a framework for the cost-effective delivery of multifunctional green infrastructure priorities.

4.10 Through the holistic consideration of the components of green infrastructure at a strategic level, priorities have been identified for mineral development within each strategic corridor which reflect the characteristics of the individual corridor, and the opportunities for multifunctional green infrastructure which mineral development can deliver (policies MLP 8 to MLP 12). 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. As the identified priorities are multifunctional and are appropriate to the particular landscape character, ecology, geology and hydrology of each corridor, they should be cost-effective for developers to implement whilst maximising integrated social, economic and environmental gains.

4.11 Policies MLP 8 to MLP 12 take account of the likely characteristics of mineral working in each of the corridors; consider how green infrastructure components[243] 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.

4.12 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,[244] and other relevant policies and strategies, as well as characteristic land management practices within the corridors.

4.13 To ensure the plan's vision is delivered and the strategic benefits of coordinated development within the strategic corridors are realised, the majority of mineral development over the life of the plan will take place within the strategic corridors. However, the spatial strategy recognises that in some circumstances, the supply of minerals from outside the strategic corridors will be necessary. Policy MLP 4 enables mineral development outside the strategic corridors where a particular mineral type does not occur within the strategic corridors, and where there is a need for a mineral with certain properties which are necessary for a particular use but which cannot be supplied in sufficient quantity from within the strategic corridors.

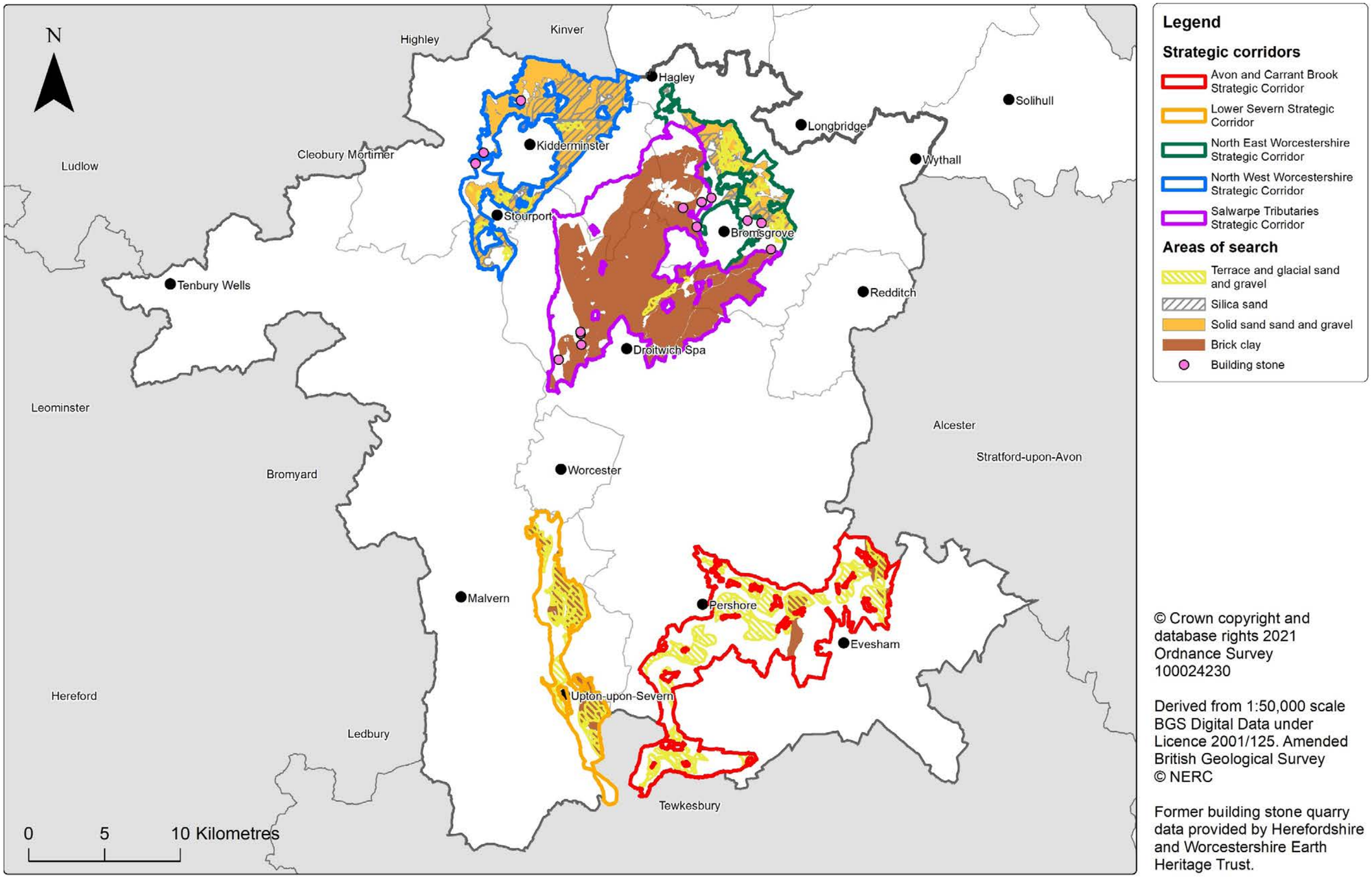
4.14 In addition, the location of some types of proposals for mineral development will be driven by other factors, such as where there is a need to amend an existing planning permission, where mineral extraction is necessary to prevent the sterilisation of resources by other non-mineral development, or where a mineral extraction from a borrow pit can directly serve a specific project nearby. These types of development may therefore occur either within or outside the strategic corridors (policy MLP 5 and policy MLP 6).

4.15 All proposals for mineral development both within and outside the strategic corridors will need to consider green infrastructure within the context of the particular site (policy MLP 7).

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

244 Worcestershire Local Enterprise Partnership's (2014) *Worcestershire Strategic Economic Plan* prioritises the visitor economy, agri-tech, horticulture and food production.

Figure 4.1. Key diagram



NOTE: In some areas, surface resources overlie bedrock resources. This affects how areas of search for terrace and glacial sand and gravel, solid sand sand and gravel, silica sand or brick clay are displayed. 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 areas of search and strategic corridors can be viewed in more detail on the Policies Map.

Strategic location of development

Specific Sites and Preferred Areas within the Strategic Corridors

Policy MLP 2: Strategic Location of Development – Specific Sites and Preferred Areas

Contributing to:

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

Specific sites and preferred areas will be allocated within the Avon and Carrant Brook, Lower Severn, North East Worcestershire, North West Worcestershire and Salwarpe Tributaries Strategic Corridors in a separate Mineral Site Allocations Development Plan Document and defined on the Policies Map*.

a) Planning permission will be granted for new mineral developments and extensions to extant sites within allocated specific sites.

b) Planning permission will be granted for new mineral developments and extensions to extant sites within allocated preferred areas where one of the following applies:

i. There is a shortfall in allocated specific sites to meet the scale of provision required over the life of the plan; or

ii. There is a demonstrated shortfall in the landbank or stock of permitted reserves in the most recent Local Aggregate Assessment (for aggregate development proposals) or Authority Monitoring Report (for non-aggregate development proposals); or

iii. There is a demonstrated shortfall in productive capacity in the most recent Local Aggregate Assessment (for aggregate development proposals) or Authority Monitoring Report (for non-aggregate development proposals); or

iv. There is a demonstrated shortfall in supply of the relevant mineral for particular uses or specifications which would be addressed by the proposed development; or

v. There is a demonstrated shortfall for a particular geographic market area which would be addressed by the proposed development.

* 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**.

Reasoned justification

4.16 Policy MLP 2 sets a policy preference for mineral development in specific site and preferred area allocations within the five strategic corridors. Within this, it sets a hierarchy which prioritises development on mineral allocations with the highest levels of certainty (specific sites), and enables development on mineral allocations which have less certainty (preferred areas) where any of the criteria in part b of the policy are met.

4.17 A Mineral Site Allocations Development Plan Document (DPD) will be prepared to allocate specific sites and preferred areas[245] in order to help facilitate mineral development and provide certainty for communities and developers about where mineral development is likely to be considered acceptable during the life of the Minerals Local Plan, subject to the policies in other parts of the Development Plan (including other policies within the Minerals Local Plan) being satisfactorily addressed. The level of certainty that mineral development will come forward will be high for specific sites, and fairly high for preferred areas.[246]

245 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

246 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.

4.18 Specific sites provide certainty on when and where mineral development is most likely to take place. Sites will only be allocated as specific sites where viable resources are known to exist, landowners are supportive of minerals development and proposals are considered likely to be acceptable in planning terms after being considered against a set of site-selection criteria.

4.19 Preferred areas are areas of known resources where planning permission might reasonably be anticipated, however they do not provide the same level of certainty as specific sites. They will be allocated after being considered against a set of site-selection criteria, but a level of uncertainty over either the viability of the mineral resources they contain, the level of landowner support, or whether particular constraints can be satisfactorily managed or mitigated will have prevented them from being allocated as specific sites.

4.20 The allocation of specific sites and preferred areas will establish that the location of mineral development is acceptable in principle. In determining whether a site should be allocated (whether for a new site or an extension to an existing site), weight will be given to the need for the specific mineral, economic considerations (such as making efficient use of resources, retaining local jobs, or the ability to utilise existing plant and other infrastructure), environmental impacts and benefits, and any cumulative impacts of proposals in the area. However, the fact that a site has been allocated will not override the need to ensure that the development proposed is sustainable. Detailed planning applications will be required and will be considered on their individual merits against the policies of the Development Plan (including other policies within the Minerals Local Plan).

Shortfall in extant sites and specific sites

4.21 Where anticipated supply from extant sites and specific site allocations will not be sufficient to meet the scale of provision required for a particular mineral type over the life of the plan, mineral development on preferred areas will be necessary to enable the steady and adequate supply of resources and will be supported. The anticipated scale of provision required for each type of mineral over the life of the plan is set out in Chapter 5. However, the balance between supply and demand, and levels of permitted reserves, will vary over the life of the Minerals Local Plan.

4.22 Any anticipated shortfall in supply from extant sites and specific site allocations for a particular mineral type will be identified in the Mineral Site Allocations DPD and through monitoring in the Local Aggregate Assessment (LAA) and Authority Monitoring Report (AMR).[247] Applicants and decision-makers should refer to the most recent LAA in relation to applications for aggregate minerals, and the most recent AMR for non-aggregate minerals.

Shortfall in landbank or productive capacity

4.23 Development of preferred areas may also be required where there is a shortfall in the required landbank or productive capacity for the relevant mineral identified or anticipated in the most recent LAA or AMR. The LAA and AMR may also highlight the potential for a shortfall in landbank or productive capacity if permitted reserves are close to minimum required levels and specific site and preferred area allocations are not coming forward as anticipated.[248]

Shortfall in supply for a particular use, specification or geographic market area

4.24 Development of preferred areas may also be required where there is a need for a material for particular uses or specifications, or where the location of existing permitted reserves and/or specific sites means they are unlikely to be able to provide a steady and adequate supply of mineral to a particular geographic market area. Where relevant, applicants will be expected to provide details of the particular markets, end uses or product specifications for which there is considered to be a shortfall in supply and should set out why these requirements cannot be met from extant sites or specific site allocations.

247 The *Local Aggregate Assessment* and *Authority Monitoring Report* are available at www.worcestershire.gov.uk/amr.

248 The *Local Aggregate Assessment* and *Authority Monitoring Report* are available at www.worcestershire.gov.uk/amr.

Likelihood of specific site and preferred area allocations for each broad mineral type

4.25 Preparation of a Mineral Site Allocations Development Plan Document (the Mineral Site Allocations DPD) was underway during the development, examination and adoption of the Minerals Local Plan.[249] The sites submitted for consideration will be subject to assessment and consultation, and the Mineral Site Allocations DPD will be subject to examination in public before it can be adopted. It will also be reviewed and may be revised during the life of the Minerals Local Plan, but (subject to at least some of the sites proposed meeting the site-selection criteria) the types of sites submitted for consideration give an indication of the likelihood of specific sites and/or preferred areas being allocated for each broad mineral type:

- specific sites and/or preferred areas are likely to be allocated for sand and gravel as multiple sites (for both terrace and glacial sand and gravel, and solid sand resources) have been put forward for consideration;
- specific sites and/or preferred areas may be allocated for sites containing silica sand as a small number of sites have been put forward for consideration which have the potential to contain silica sand alongside solid sand resources;
- specific sites and/or preferred areas are not anticipated for crushed rock, brick clay, other industrial minerals, building stone or energy minerals as no sites have been put forward for consideration.

Public Right of Way at restored Church Farm South quarry

249 The timetable for the preparation of the *Mineral Site Allocations Development Plan Document* is set out in the *Local Development Scheme*, available at www.worcestershire.gov.uk/lds.

Areas of search and windfall sites within the strategic corridors

Policy MLP 3: Strategic Location of Development – Areas of Search and Windfall Sites within the Strategic Corridors

Contributing to:

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

Areas of search are allocated within the Avon and Carrant Brook, Lower Severn, North East Worcestershire, North West Worcestershire and Salwarpe Tributaries Strategic Corridors, as shown on Figure 4.1 (Key diagram) and defined on the Policies Map.*

a) Planning permission will be granted for new mineral developments and extensions to extant sites within allocated areas of search where there is a shortfall in supply as demonstrated by part c.

b) Planning permission will be granted for new mineral developments and extensions to extant sites on windfall sites within the strategic corridors where there is both a shortfall in supply as demonstrated by part c and either:

   i. the mineral resource was not allocated due to viability, environmental or amenity constraints, and it is clearly demonstrated by the applicant that those constraints can be satisfactorily managed or mitigated; or

   ii. the deposits were not known, or were not considered to be resources of local or national importance, and therefore did not inform the identification of mineral allocations, and sufficient geological and market data is provided by the applicant to demonstrate the presence of a nationally or locally important mineral resource.

c) A shortfall in supply for a broad mineral type will be considered to exist where:

   i. there is a shortfall in extant sites and allocated specific sites and/or preferred areas to meet the scale of provision required over the life of the plan; or

   ii. there are sufficient extant sites and allocated specific sites and/or preferred areas to meet the scale of provision required over the life of the plan but one of the following applies:

      » there is a demonstrated shortfall in the landbank or stock of permitted reserves demonstrated in the most recent Local Aggregate Assessment (for aggregate development proposals) or Authority Monitoring Report (for non-aggregate development proposals); or

      » there is a demonstrated shortfall in productive capacity in the most recent Local Aggregate Assessment (for aggregate development proposals) or Authority Monitoring Report (for non-aggregate development proposals); or

      » there is a demonstrated shortfall in supply of the relevant mineral for particular uses or specifications which would be addressed by the proposed development; or

      » there is a demonstrated shortfall for a particular geographic market area which would be addressed by the proposed development.

* 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**.

Reasoned justification

Areas of search

4.26 The allocated areas of search are shown on Figure 4.1 (Key diagram) and are defined on the Policies Map.[250]

4.27 There is less certainty that mineral development will come forward in the areas of search[251] than on specific sites and preferred areas, as they are based on an analysis of where mineral resources exist in the county which are not affected by significant viability, environmental or amenity constraints[252], but they are not sites which have been proposed by landowners or mineral operators. Areas of search have been allocated 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 8 to MLP 12) to provide as much certainty as possible to communities over where and how mineral development might take place if there is a shortfall in supply of a particular mineral.

4.28 Areas of search have been allocated for the majority of the types of mineral resources found in Worcestershire:

- 100 areas of search are allocated for sand and gravel (70 for terrace and glacial sand and gravel resources, and 30 for solid sand resources);
- 41 areas of search are allocated for silica sand;
- 13 areas of search are allocated for brick clay; and
- 17 areas of search are allocated for building stone.[253]

4.29 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.[254] No areas of search have been designated for other types of mineral.

4.30 Whilst the allocation of areas of search indicates that the location of mineral development is likely to be acceptable, particularly where there is a shortfall in supply, the fact that a site has been allocated as an area of search will not override the need to ensure that the development proposed is sustainable. Planning applications for sites within areas of search and for windfall sites will be required and will be considered on their individual merits against the policies of the Development Plan (including other policies within the Minerals Local Plan). In determining whether the location of a particular development proposal is acceptable, whether for a new site or an extension to an existing site, weight will be given to the need for the specific mineral, economic considerations (such as making efficient use of resources, retaining local jobs, or the ability to utilise existing plant and other infrastructure), environmental impacts and benefits, and any cumulative impacts of proposals in the area.

Windfall sites within the strategic corridors

4.31 The areas of search encompass all of the mineral resources within the strategic corridors which are not affected by significant viability, environmental or amenity constraints.[255] However, it is possible that the constraints on a particular resource could be satisfactorily addressed by a particular development proposal, or that mineral deposits exist within the corridors which were either not considered to be a mineral resource of local or national importance or not known about during the development of the Minerals Local Plan.

4.32 The analysis of mineral resources which led to the identification of areas of search considered the available information about the mineral resources which are present in the county in order to evaluate the likelihood of them being suitable and commercially attractive for exploitation during the lifetime of the Minerals Local Plan. This included consideration of high-level viability criteria, and addressed the National Planning Policy Framework's requirement that plans should allocate land with

250 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.

251 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.

252 See Worcestershire County Council (2021) *Analysis of Mineral Resources* and Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

253 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.

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

255 See Worcestershire County Council (2021) *Analysis of Mineral Resources* and Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018), available at www.worcestershire.gov.uk/mineralsbackground.

the least environmental or amenity value [256] by screening out land with national or international designations which should be afforded the highest level of protection.

4.33 The information available about the quantity and quality of resources is variable, and a number of assumptions were made to enable the strategic assessment of the viability of resources.[257] Site-specific information about the quantity and quality of material in a particular deposit, or significant changes in the economic viability of a particular type of mineral, may indicate that the viability constraints can be overcome.

4.34 Whilst resources in areas with national or international designations have not been allocated as areas of search, it may be possible for a mineral development to be designed, worked and restored in such a way as to avoid causing harm or unacceptable impacts to those designated areas, or to manage or mitigate any impacts to an acceptable level. Where applicants consider this to be the case, they will need to clearly demonstrate this, in accordance with the policies set out in Chapter 6 (Development Management).

4.35 It is possible that over the plan period, applications may come forward to work mineral deposits which were either not known to exist at the time the plan was developed, or for which there was not sufficient evidence that they should be considered to be a mineral resource of national or local importance and were therefore not analysed for potential allocation in the Minerals Local Plan. Applicants will be expected to provide evidence to demonstrate the type, quantity and quality of the material proposed to be worked, and appropriate information to demonstrate that it is a nationally or locally important resource.

Shortfall in supply

4.36 Where extant sites and specific site or preferred area allocations are not sufficient to meet the scale of provision required for a particular mineral type over the life of the plan, mineral development on areas of search will be necessary to enable the steady and adequate supply of resources and will be supported. The scale of provision required for each type of mineral over the life of the plan is set out in Chapter 5 and will be monitored through the Local Aggregate Assessment and Authority Monitoring Report,[258] which will include consideration of whether specific site and preferred area allocations are coming forward as anticipated.

4.37 It may also be appropriate to bring forward development on windfall sites elsewhere within the strategic corridors, subject to meeting the requirements of part b of policy MLP 3.

4.38 A shortfall in extant sites and allocated specific sites and/or preferred areas will exist where:

- Permitted reserves at existing sites do not contain a sufficient amount of a particular mineral resource to meet the scale of provision required and the Mineral Site Allocations DPD has not yet been adopted;
- the specific sites and preferred area allocations, together with any permitted reserves at extant sites, do not collectively contain a sufficient amount of a particular mineral resource to meet the scale of provision required; or
- permitted reserves at existing sites do not contain a sufficient amount of a particular mineral resource to meet the scale of provision required, and sites for the particular mineral type have not been allocated because none were put forward, or those which were put forward did not meet site-selection criteria for allocation.

4.39 Even when the specific sites and preferred area allocations, together with any permitted reserves at extant sites, do collectively contain a sufficient amount of particular mineral resource to meet the scale of provision required, mineral development on areas of search and windfall sites may still be required where there is a shortfall in the required landbank or productive capacity for the relevant mineral identified or anticipated[259] in the most recent Local Aggregate Assessment or Authority Monitoring Report, where there is a need for a material for particular uses or specifications, or where the location of existing permitted reserves and/or specific sites means they are unlikely to be able to provide a steady and adequate supply of mineral to a particular geographic market area. Where relevant, applicants will be expected to provide details of the particular markets, end uses or product specifications for which there is considered to be a shortfall in supply.

256 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 175.

257 See Worcestershire County Council (2021) *Analysis of Mineral Resources*.

258 The *Local Aggregate Assessment* and *Authority Monitoring Report* are available at www.worcestershire.gov.uk/amr.

259 The *Local Aggregate Assessment* and *Authority Monitoring Report* may highlight the potential for a shortfall in landbank or productive capacity if permitted reserves are close to minimum required levels and specific site and preferred area allocations are not coming forward as anticipated.

Windfall sites outside the strategic corridors

Policy MLP 4: Strategic Location of Development – Windfall Sites outside the Strategic Corridors

Contributing to:

Objectives MO1, MO5

Planning permission for new mineral developments and extensions to extant sites will be granted on windfall sites outside the strategic corridors where:

a) the broad mineral type is not found within the strategic corridors; or

b) the broad mineral type can be found within the strategic corridors, but it is demonstrated that the proposed development would enable the supply of mineral products with the properties necessary for specific uses or specifications which cannot be supplied in sufficient quantity from within the strategic corridors.

Reasoned justification

4.40 Crushed rock resources do not occur within the strategic corridors, and no areas of search have been designated for crushed rock due to the viability, environmental and amenity constraints affecting the majority of the land in Worcestershire which contains crushed rock resources. Specific sites and/or preferred area allocations are not anticipated for crushed rock as no sites have been put forward for consideration. Any sites for crushed rock will therefore necessarily be located on windfall sites outside the strategic corridors.

4.41 Sand and gravel, brick clay, silica sand, and building stone resources are all found within the strategic corridors, but where there is a need for a mineral with certain properties which are necessary for a particular use, but which cannot be supplied in sufficient quantity from within the strategic corridors, development on windfall sites outside the strategic corridors may be necessary. Any development proposal for these types of mineral outside the strategic corridors would need to include a proportionate level of technical information provided by an appropriate and competent expert to demonstrate the specific properties of the resource, the reasons why those particular properties are necessary, and evidence to demonstrate why material with the necessary properties cannot be supplied in sufficient quantity from within the strategic corridors.

4.42 The strategic corridors contain extensive areas of search for sand and gravel, and therefore it is highly likely that products with the necessary properties for most uses and specifications will be able to be delivered from within the strategic corridors.

4.43 The strategic corridors contain extensive areas of search for silica sand. The type of silica sand they contain is suitable for foundry uses (naturally bonded moulding sands). It is highly likely that silica sand with the necessary properties for foundry uses will therefore be able to be delivered from within the strategic corridors.

4.44 Whilst the strategic corridors contain extensive areas of search for brick clay, information about the quality and properties of the resources within the Mercia Mudstone Group is limited, and it is possible that other geological groups or formations in the county may also have the potential to provide brick clay resources. Applications for brick clay outside the strategic corridors will be supported where applicants demonstrate that clay with particular forming or firing properties, or for a particular blend of clays to achieve the colours or other aesthetic qualities required cannot be supplied in sufficient quantity from within the strategic corridors.

4.45 The strategic corridors only contain a limited number of areas of search for building stone, and these may not include all types of building stone. It is recognised that a project may call for a particular type of stone, and that there

can be significant variations in the appearance and characteristics of building stone, even within the same broad stone type. Proposals for building stone development outside the strategic corridors should include reference to the specific appearance and characteristics of the building stone required where variations in the appearance or characteristics of stone prevent those within the strategic corridors being suitable for use in a particular project.

4.46 It is possible that over the plan period, applications may come forward to work other types of mineral deposits which were either not known to exist at the time the plan was developed, or for which there was not sufficient evidence that they should be considered to be a mineral resource of national or local important and were therefore not analysed for potential allocation in the Minerals Local Plan. Applicants will be expected to provide evidence to demonstrate the type, quantity and quality of the material proposed to be worked, and appropriate information to demonstrate that it is a nationally or locally important resource. To justify development outside the strategic corridors, a proportionate level of technical information will need to be provided by an appropriate and competent expert to demonstrate why the material cannot be supplied in sufficient quantity from within the strategic corridors.

4.47 The suitability of each proposed windfall development, whether a new site or an extension to an existing site, must be considered on its individual merits against the policies of the Development Plan (including other policies within the Minerals Local Plan). In determining whether the location of a particular development is acceptable, weight will be given to the need for the specific mineral, economic sustainability (such as making efficient use of resources, retaining local jobs, or the ability to utilise existing plant and other infrastructure), environmental impacts and benefits, and any cumulative impacts of proposals in the area.

Processing crushed rock at Fish Hill Quarry

Proposals within or outside a strategic corridor

Policy MLP 5: Extant Mineral Sites and Safeguarded Resources

Contributing to:

Objectives MO1, MO5, MO6

Planning permission will be granted for:

a) alterations to the mineral development permitted within the boundary of a site with extant planning permission, either within or outside a strategic corridor, subject to other parts of the Development Plan being satisfactorily addressed;

b) mineral development within a Mineral Safeguarding Area (either within or outside a strategic corridor) which would prevent all or some of the mineral resource from being sterilised by non-minerals development in accordance with policy MLP 41.

Reasoned justification

Sites with extant mineral planning permission

4.48 Over the life of the plan, proposals to alter mineral 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. Applications to vary planning conditions are not unusual for mineral sites, as development usually takes place over a number of years. For example, they may be required to enable more efficient working or processing of minerals, to amend restoration schemes to reflect particular site conditions which could not be anticipated at the time of the original application, or to reflect the latest best practice.

4.49 The principle of mineral development within the boundary of extant sites has already been established either in advance of the Minerals Local Plan being adopted, or after consideration against the tests of policies MLP 2-MLP 4. Policy support is therefore provided in policy MLP 5 to enable alterations to the development permitted within extant sites both within and outside the strategic corridors.

4.50 Whilst the principle of mineral development is already established by the extant planning permission, the suitability of any proposed alterations to the permitted development must be considered on their individual merits against the policies of the Development Plan (including other policies within the Minerals Local Plan). Weight will be given to the need for the specific mineral, economic considerations (such as making efficient use of resources, retaining local jobs, or the ability to utilise existing plant and other infrastructure), environmental impacts and benefits, and any cumulative impacts of proposals in the area, and policy support to enable such alterations to existing permissions will not override the need to ensure that the development proposed is sustainable.

4.51 Any proposals to extend a site beyond the red line boundary of the existing permitted site will not be considered to be part of a site with extant planning permission, as the principle of mineral development has not been established on any additional land. The red line boundaries on extant planning permissions will be considered definitive when addressing this issue. Proposals for extensions to existing mineral sites will be considered on their own merits against the tests of Policy MLP 4, as appropriate.

Winning and working of resources to prevent sterilisation

4.52 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).

Building stone from Fish Hill Quarry

4.53 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 against the tests of Policy MLP 2 - MLP 4, as appropriate.

4.54 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.

4.55 The suitability of each proposed development must be considered on its individual merits against the policies of the Development Plan (including other policies within the Minerals Local Plan). Support to enable such development will not override the need to ensure that the development proposed is sustainable, and weight will be given to the need to prevent sterilisation of resources, economic considerations, environmental impacts and benefits, and any cumulative impacts of proposals in the area.

Borrow pits

Policy MLP 6: Borrow Pits

Contributing to:

Objectives MO1, MO2, MO4, MO5, MO6

Planning permission will be granted for borrow pits, either within or outside the strategic corridors, where it is demonstrated that all of the following points apply:

a) the borrow pit is operationally related to a specified project and the mineral extracted will only be used in connection with that 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

4.56 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 proposals for borrow pits will therefore not necessarily reflect the location of mineral site allocations or the strategic corridors.

4.57 Borrow pits 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.

4.58 To be classified as a borrow pit, proposals must meet all of the requirements of policy MLP 6 (Borrow Pits). Proposals that do not meet all the criteria in policy MLP 6 will be considered to be standalone mineral workings, not borrow pits.

Association with the specified project

4.59 It is important to ensure that borrow pits are closely linked to the project with which they are associated, and this will be an important factor in determining whether the location of a proposed development is acceptable. 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

4.60 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 26 to MLP 40). Where the proposed borrow pit is within a strategic corridor, the priorities set out in the relevant policy (policies MLP 8 to MLP 12) will apply. In all locations, green infrastructure networks and the site's local context should inform working, restoration, and long-term management proposals, in accordance with policy MLP 7.

4.61 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

4.62 Green infrastructure is a network of multifunctional green spaces and natural elements.[260] It is capable of delivering a wide range of economic, environmental and quality of life benefits for local communities.[261] [262] The underlying principle of green infrastructure is that the same area of land can frequently offer multiple benefits.

4.63 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.[263] It can enhance and restore the setting of heritage assets, and can make a significant contribution to halting the decline in biodiversity.[264] 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.

4.64 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.

4.65 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.

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

261 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*.

262 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.

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

264 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 7: Green Infrastructure

Contributing to:

Objectives MO2, MO3, MO4, MO5

Planning permission will be granted where it is demonstrated that the proposed mineral development will conserve 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 local economic, social and environmental context of the site;
b) the potential impacts of climate change;
c) 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;
d) the green infrastructure priorities of the relevant strategic corridor (where the proposed development is within a strategic corridor) or the strategic context of green infrastructure components within the wider green infrastructure network (where the proposed development is not within a strategic corridor); and
e) how green infrastructure benefits will be secured for the long term.

Where the proposed development is within a strategic corridor and the proposal would make very limited or no contribution to the delivery of the priorities of the relevant strategic corridor as a whole, this will only be considered appropriate where the economic, social and/or environmental benefits of the proposed development outweigh the benefits which could be realised by delivering the priorities of the relevant strategic corridor.

Reasoned justification

4.66 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.

4.67 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 8 to MLP 12.

4.68 The technical assessment required by policy MLP 7 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 7 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.

4.69 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.

Local economic, social and environmental context

4.70 The technical assessment required by policy MLP 7 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.

4.71 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 [265] including the potential for habitats on site to support the migratory birds and fish of the Severn Estuary SAC, SPA and Ramsar site,[266] 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-being[267], and any cumulative impacts or cumulative opportunities arising from the development itself and/or from other existing or proposed development.

265 See https://www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory.

266 This must be taken into account in Habitat Regulations Assessment Screening (see also policy MLP 31).

267 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.

Biodiversity-rich rock face (courtesy of Herefordshire and Worcestershire Earth Heritage Trust)

Potential impacts of climate change

4.72 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 7 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.

4.73 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.

Water meadows near Evesham

Site-specific and strategic green infrastructure opportunities

4.74 The components of green infrastructure have been considered holistically at a strategic scale to identify multifunctional priorities for each strategic corridor in policies MLP 8 to MLP 12. However, when developing site-specific proposals, consideration of each of the components in part c of policy MLP 7 may reveal opportunities which could not be identified at the strategic scale.

4.75 For sites both within and outside the strategic corridors, the technical assessment required by policy MLP 7 should consider each of the green infrastructure components in part c of policy MLP 7, 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 conservation 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.

4.76 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.

4.77 Where the site is within a strategic corridor, the technical assessment 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 8 to MLP 12). 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. 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.

4.78 Where a site is not within a strategic corridor, the technical assessment required by Policy MLP 7 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.

Securing green infrastructure benefits for the long term

4.79 Effective implementation and management will be critical to delivering the intended green infrastructure outcomes. Use of a 'benchmarking' system[268] 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.

4.80 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 7 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.[269] A green infrastructure strategy or concept plan for the site may be a useful tool to bring this information together.[270]

4.81 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.

Strategic corridor priorities

4.82 Mineral development presents significant opportunities to deliver multifunctional gains through the integration of green infrastructure at a landscape scale. Green infrastructure priorities have been identified for each strategic corridor based on the consideration of a wide range of factors including the potential for working and restored sites to improve habitat networks; to support locally important economic sectors such as agriculture and the visitor economy; to provide social benefits through enhanced public access; and to deliver ecosystem services such as flood and climate change resilience. These priorities have been established[271] to guide developers on the appropriate balance between different green infrastructure components, and to highlight mechanisms to deliver multifunctional benefits which are most likely to be appropriate to the locality.

4.83 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.[272] These contributions will be appropriate to the key characteristics of the landscape types within each corridor[273] and will address climate change mitigation and adaptation, enable and support healthy lifestyles, improve air quality and conserve and enhance the natural, built and historic environment.

4.84 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.[274] Each development proposal will need to be assessed on a site-by-site basis, but the priorities set out in policies MLP 8 to MLP 12 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.

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

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

270 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.

271 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 1 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.

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

273 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.

274 Through ROMPs and planning applications to alter the conditions imposed as part of existing planning permissions.

4.85 The green infrastructure priorities seek to reflect and deliver benefits for the economic, social and environmental pillars of sustainability. Details of how the priorities contribute to each of these are set out in the reasoned justification supporting each strategic corridor policy. The policies also allow for specific economic, social and/or environmental benefits to justify a departure from delivering the priorities.

4.86 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

4.87 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.

4.88 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 sub- divided 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).[275]

Principal Village Farmlands landscape type

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

4.89 Agricultural land uses dominate much of this corridor and are an important part of the local economy. This area makes a significant contribution to Worcestershire's strong base of horticultural and food sector businesses[276], with 48.4% of the corridor being best and most versatile agricultural land,[277] and land use in the Principal Village Farmlands being very strongly based on cropping and horticulture. Arable land uses and locally significant orchards also help to define the landscape character within the corridor. However, water shortages[278] 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.[279] The majority of the watercourses in the corridor are not currently meeting Water Framework Directive targets for "good ecological status".[280]

4.90 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 Area[281] 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.[282] It has potential to support wintering and passage bird populations of the Severn Estuary SPA and Ramsar site, for example by providing food and shelter at times of flooding or other extreme weather when normal roosting and feeding sites are unavailable. It also has potential to support migratory fish species of the Severn Estuary SAC and Ramsar site.

4.91 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.

4.92 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.

276 *Worcestershire Strategic Economic Plan* (March 2014) https://www.wlep.co.uk/wp-content/uploads/WLEP-Final-SEP-310314-V-1-1.pdf

277 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.

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

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

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

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

282 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.

4.93 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,[283] and proposed growth in Tewkesbury[284]. Although there are good links to the strategic highway network in the north of the corridor, there may be capacity constraints on some routes, and 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.

4.94 The Avon and Carrant Brook Strategic Corridor contains 32.9%[285] of the county's terrace and glacial sand and gravel resources and 1.2%[286] 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 sites[287] in the Avon and Carrant Brook Strategic Corridor in the past, but there are currently no extant workings[288] within the Avon and Carrant Brook Strategic Corridor.

4.95 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.[289] It is therefore likely that parts of a site might be restored to previous levels, but some areas of lower land may be necessary.

4.96 As the sand and gravel deposits in the Avon and Carrant Brook Corridor are believed to be relatively thin and dispersed,[290] 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.

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

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

285 By area, based on the key and significant resources identified in Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Mineral Resources* takes account of viability, 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).

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

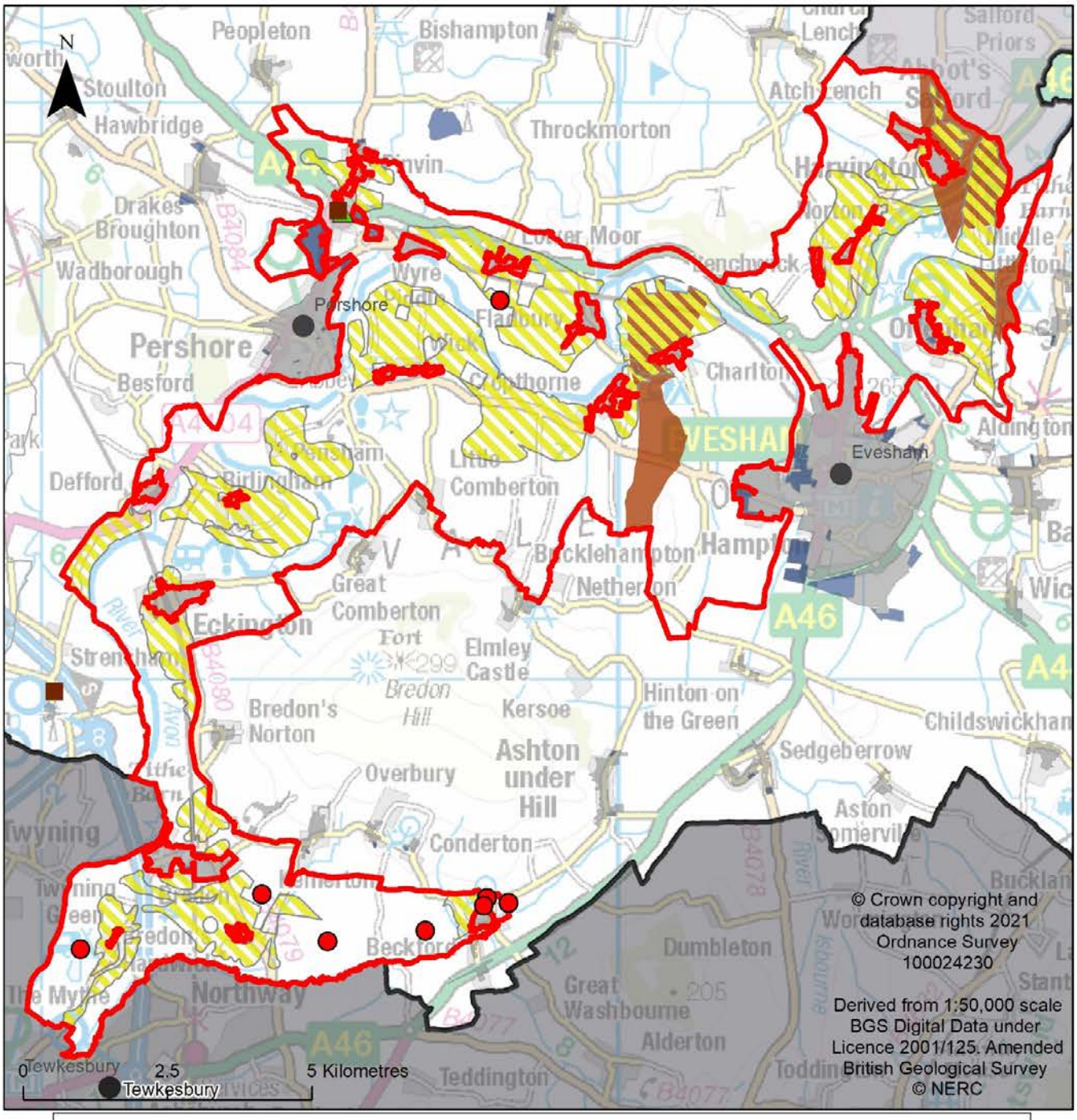
287 Lower Moor Quarry, Court Farm, Beckford Quarry, Costwold Plant Hire workings, Carrant Brook Pit, Aston Mill, Kemerton Quarry and Bredon's Hardwick Quarry. These can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

288 At 31st December 2017.

289 See policy MLP 26 (Efficient Use of Resources).

290 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



Legend

Strategic corridors
- Avon and Carrant Brook Strategic Corridor

Supporting Infrastructure

Plant type
- Asphalt
- Concrete

Areas of search
- Terrace and glacial sand and gravel
- Brick clay
- Settlements
- City, Borough and District site allocations

Permitted Minerals Sites

Status
- Restored (closed)

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: 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 conservation, 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, where practicable, optimise the contribution the site will make to delivery of the following green infrastructure priorities:

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.

Proposals should demonstrate how the development will deliver these priorities at each stage of the site's life, and why the proposed scheme is considered to be the optimal practicable solution. Where site-specific circumstances and/or other policies in the development plan limit the ability to deliver one or more of the priorities, this should be clearly set out in the assessment.

Where the proposal would make very limited or no contribution to the delivery of these priorities as a whole, this will only be considered appropriate where the economic, social and/or environmental benefits of the proposed development outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.97 Policy MLP 8 sets the priorities for the delivery of multifunctional green infrastructure in the Avon and Carrant Brook Strategic Corridor. The balance of priorities in this strategic corridor is intended to integrate the delivery of priority habitats alongside agricultural land uses, where these land uses are important to the local economy or the character of the area. The priorities will contribute to multiple green infrastructure components, deliver economic benefits (particularly for horticulture and agriculture), as well as providing climate change adaptation and mitigation as a result of contributions to improving water quality, flood betterment and reducing water shortages.

4.98 The corridor priorities can be integrated and delivered alongside each other. Proposals should, wherever possible, seek to contribute to all of the priorities, although the ability to do so will depend on the site-specific circumstance and, in some cases, it may not be possible or desirable to deliver all priorities within the boundaries of a single site when the size of the site or other local factors are taken into account. It may be that only some of the priorities are deliverable, due to the need to balance other considerations, including those set out in policy MLP 26 (Efficient Use of Natural Resources). The ability of an individual development to deliver only a single priority is likely to be exceptional, as the priorities have been carefully designed to be complementary to the local landscape, agricultural uses, geology and other green infrastructure components. Significant deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits, however opportunities to deliver the priorities as part of, or alongside, any final after-use of the site should be fully considered. Applicants are encouraged to

explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.99 The technical assessment required by policy MLP 8 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 7 (Green Infrastructure) and policies MLP 26 to MLP 40 (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

4.100 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.

4.101 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.

4.102 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.

4.103 In the Principal Village Farmlands and Village Farmlands with Orchards landscape types, where agricultural land quality is often high, arable land-uses (including cropping[291] and horticulture[292]) 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.

4.104 Wetland features should be delivered during working phases as well as during the restoration of sites. The site design, levels and phasing of

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

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

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.[293] *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[294] provides useful information about the types of wetland habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory[295] should be referred to when considering the opportunities to link and extend existing habitats.

4.105 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

4.106 Linear tree belts along ditches, watercourses and in hedgerows, and the restoration of hedgerows[296] 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.

4.107 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.

4.108 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

4.109 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.

4.110 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.

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

294 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.

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

296 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.

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

4.111 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.

4.112 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.

Lower Severn Strategic Corridor

Characteristics of the corridor

4.113 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.

4.114 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).[297]

4.115 Agricultural land uses dominate much of this corridor and are an important part of the local economy. This area makes a significant contribution to Worcestershire's strong base of horticultural and food sector businesses[298], with 33.7% of the corridor being best and most versatile agricultural land.[299] 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.

4.116 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.[300] The majority of the watercourses in the corridor are not currently meeting Water Framework Directive targets for "good ecological status".[301]

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

298 *Worcestershire Strategic Economic Plan* (March 2014) https://www.wlep.co.uk/wp-content/uploads/WLEP-Final-SEP-310314-V-1-1.pdf

299 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.

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

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

Settled Farmlands on River Terrace Landscape Type

4.117 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 Area[302] 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.[303] The Lower Severn Strategic Corridor has potential to support wintering and passage bird populations of the Severn Estuary SPA and Ramsar site, for example by providing food and shelter at times of flooding or other extreme weather when normal roosting and feeding sites are unavailable. It also has potential to support migratory fish species of the Severn Estuary SAC and Ramsar site.

4.118 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.

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

303 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.

4.119 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 Geopark[304] and there is a cluster of geological Sites of Special Scientific Interest and Local Geological Sites close to the village of Clifton.

4.120 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 Corridor[305] 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.

4.121 Mineral development in the Lower Severn Strategic Corridor would be well located to serve planned growth in the wider Worcester area, Malvern and Pershore,[306] and proposed growth in Tewkesbury[307]. 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.

4.122 The Lower Severn Strategic Corridor contains 15.5%[308] of the county's terrace and glacial sand and gravel resources and 2.5%[309] of the county's Mercia Mudstone clay resource. Sand and gravel has been worked extensively[310] 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.

4.123 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.[311] It is therefore likely that parts of a site might be restored to previous levels, but some areas of lower land may be necessary.

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

305 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.

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

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

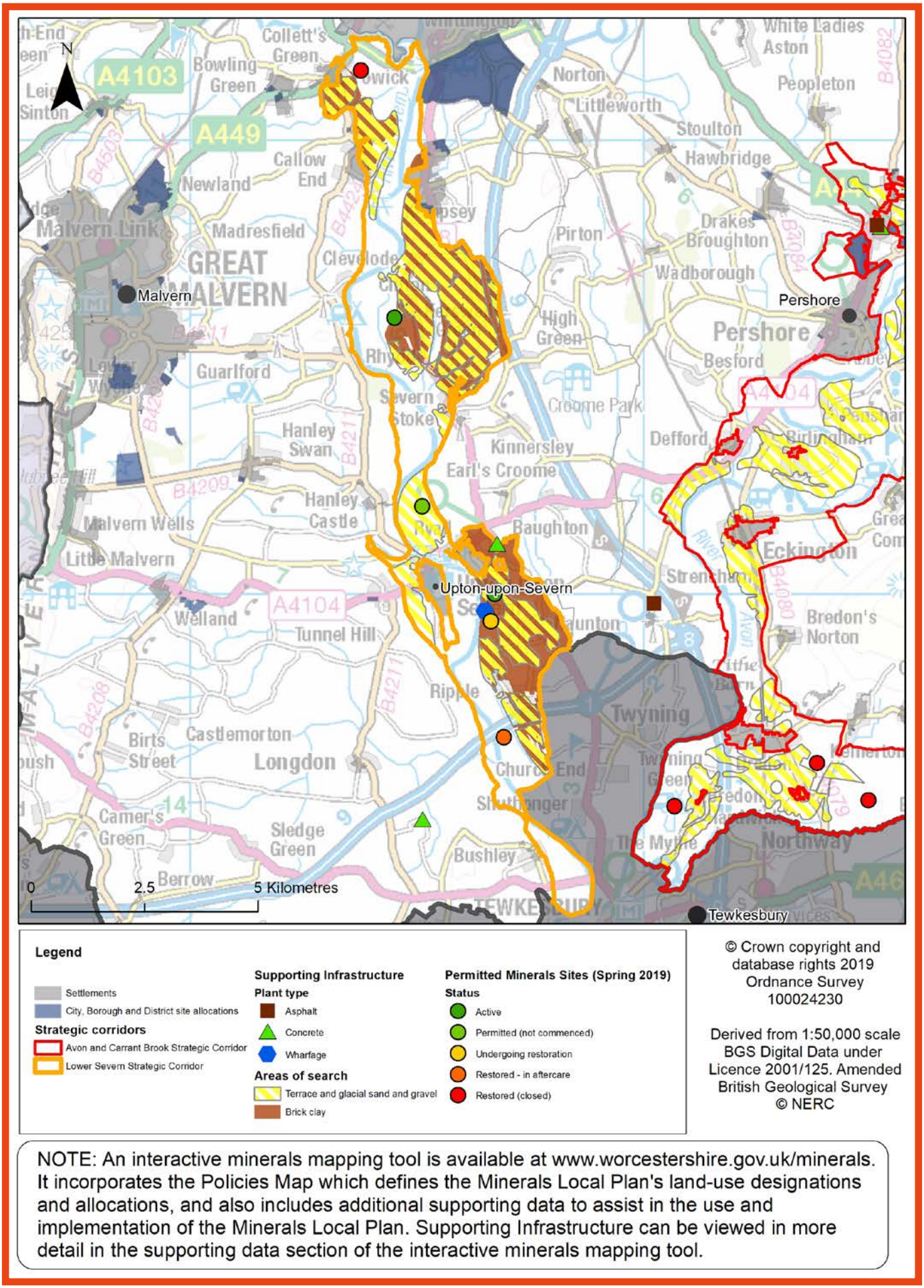
308 By area, based on the key and significant resources identified in Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, environmental and amenity screening criteria. For further information see Worcestershire County Council's background document *Location of development: screening and site selection methodology* (August 2018).

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

310 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.

311 See policy MLP 26 (Efficient Use of Resources)

Figure 4.3. Lower Severn Strategic Corridor



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 9: 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 conservation, 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, where practicable, optimise the contribution the site will make to delivery of the following green infrastructure priorities:

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.

Proposals should demonstrate how the development will deliver these priorities at each stage of the site's life, and why the proposed scheme is considered to be the optimal practicable solution. Where site-specific circumstances and/or other policies in the development plan limit the ability to deliver one or more of the priorities, this should be clearly set out in the assessment.

Where the proposal would make very limited or no contribution to the delivery of these priorities as a whole, this will only be considered appropriate where the economic, social and/or environmental benefits of the proposed development outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.124 Policy MLP 9 sets the priorities for the delivery of multifunctional green infrastructure in the Lower Severn Strategic Corridor. The balance of priorities in this strategic corridor is intended to integrate improvements to flood plain connectivity, either alongside agricultural land uses where these are important to the local economy or the character of the area, or alongside semi-natural green spaces where they enhance existing recreation networks or provide an alternative visitor destination. The priorities have the potential to contribute to multiple green infrastructure components, including improving recreation provision for local communities and delivering social and economic benefits through flood betterment, as well as providing climate change adaptation and mitigation.

4.125 The corridor priorities can be integrated and delivered alongside each other. Proposals should, wherever possible, seek to contribute to all of the priorities, although the ability to do so will depend on the site-specific circumstance and, in some cases, it may not be possible or desirable to deliver all priorities within the boundaries of a single site when the size of the site or other local factors are taken into account. It may be that only some of the priorities are deliverable, due to the need to balance other considerations, including those set out in policy MLP 26 (Efficient Use of Natural Resources). The ability of an individual development to deliver only a single priority is likely to be exceptional, as the priorities have been carefully designed to be complementary to the local landscape, agricultural uses, geology and other green infrastructure components. Significant deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits, however opportunities to deliver the priorities as part of, or alongside,

any final after-use of the site should be fully considered. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.126 The technical assessment required by policy MLP 9 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 7 (Green Infrastructure) and policies MLP 26 to MLP 40 (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

4.127 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.

4.128 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.

4.129 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.

4.130 In the Settled Farmlands on River Terraces landscape type, where agricultural land quality is often high, arable land-uses (including cropping[312] and horticulture[313]) can contribute positively to the character and local distinctiveness of the landscape. Restoration to these types of agricultural land uses can

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

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

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.

4.131 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.[314] *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[315] provides useful information about the types of wetland habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory[316] should be referred to when considering the opportunities to link and extend existing habitats.

4.132 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

4.133 Tree cover along watercourses and streams, and the restoration of characteristic hedgerow patterns[317] 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.

4.134 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.

4.135 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.

4.136 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.

4.137 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.

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

315 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.

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

317 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.

Fen and marsh habitats

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

4.138 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.

4.139 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,[318] 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.

4.140 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.

4.141 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.[319] 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.

4.142 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.

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

319 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

4.143 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.

4.144 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).[320]

4.145 Although only 18.6% of the corridor is classed as best and most versatile agricultural land,[321] 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.

4.146 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. [322] The majority of the watercourses in the corridor are not currently meeting Water Framework Directive targets for "good ecological status".[323]There are multiple Source Protection Zones designated within the corridor.

4.147 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.[324] Habitats in the North East Worcestershire Strategic Corridor have the potential to support wintering and passage bird populations of the Severn Estuary SPA and Ramsar site, for example by providing food and shelter at times of flooding or other extreme weather when normal roosting and feeding sites are unavailable. The North East Worcestershire Strategic Corridor also has potential to support migratory fish species of the Severn Estuary SAC and Ramsar site.

4.148 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.

4.149 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.[325]

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

321 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.

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

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

324 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.

325 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* identifies a need to relieve visitor pressure on the Lickey Hills and Clent Hills. The *Worcestershire Green Infrastructure Strategy Framework 3* document suggests that this could be done through extending the green corridor and publicly-accessible open space east of the Lickey Hills to encompass Upper and Lower Bittell Reservoirs and the Worcester and Birmingham canal, however there are currently no proposals to develop this scheme further.

4.150 Mineral development in the North East Worcestershire Strategic Corridor would be well located to serve planned growth in Bromsgrove,[326] Redditch,[327] Droitwich Spa[328] and the West Midlands conurbation. There are good links to the strategic highway network throughout the majority of the corridor, although there may be capacity constraints on some routes. 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.

4.151 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.[329] Minerals development also has the potential to enhance the beneficial use of the Green Belt[330] through providing enhanced public access and recreation opportunities, enhancing landscapes, visual amenity and biodiversity, and improving damaged and derelict land.

4.152 The North East Worcestershire Strategic Corridor contains 4.0%[331] of the county's terrace and glacial sand and gravel resources, 24.9%[332] of the county's solid sand resources (including 23.2%[333] of the Wildmoor Sandstone Formation which contains silica sand resources), 0.2%[334] of the county's Mercia Mudstone clay resource, and four[335] historic building stone sites. Sand and gravel (primarily solid sand) has been worked extensively[336] and some silica sand has been worked[337] in the North East Worcestershire Strategic Corridor.

4.153 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.[338] 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.

Principal Settled Farmlands landscape type

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

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

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

329 See policy MLP 27 (Green Belt) and Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, section 13.

330 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 145 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".

331 By area, based on the key and significant resources identified in Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, 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).

332 By area, based on the key and significant resources identified in Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, 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).

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

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

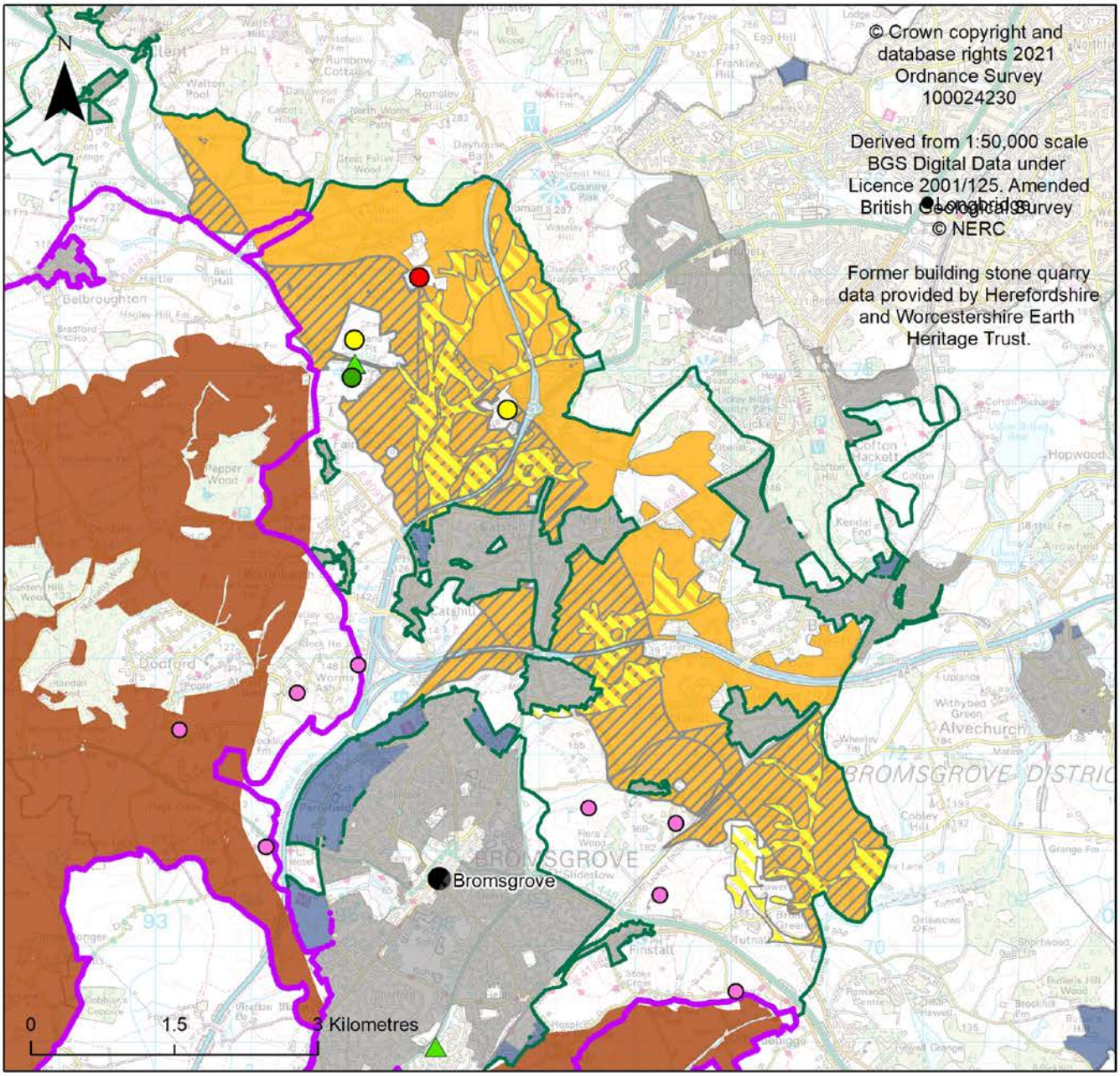
335 Based on the remaining historic building stone sites identified by Herefordshire and Worcestershire Earth Heritage Trust's project "A Thousand Years of Building with Stone" (http://www.buildingstones.org.uk/) after viability, environmental and amenity screening criteria were applied. For further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

336 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.

337 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.

338 See policy MLP 26 (Efficient Use of Resources).

Figure 4.4. North East Worcestershire Strategic Corridor



Legend

Settlements

Supporting Infrastructure

Plant type

Concrete

City, Borough and District site allocations

Strategic corridors

North East 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

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 10: 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 conservation, 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, where practicable, optimise the contribution the site will make to delivery of the following green infrastructure priorities:

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.

Proposals should demonstrate how the development will deliver these priorities at each stage of the site's life, and why the proposed scheme is considered to be the optimal practicable solution. Where site-specific circumstances and/or other policies in the development plan limit the ability to deliver one or more of the priorities, this should be clearly set out in the assessment.

Where the proposal would make very limited or no contribution to the delivery of these priorities as a whole, this will only be considered appropriate where the economic, social and/or environmental benefits of the proposed development outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.154 Policy MLP 10 sets the priorities for the delivery of multifunctional green infrastructure in the North East Worcestershire Strategic Corridor. The balance of priorities in this strategic corridor is intended to integrate the creation of scarce habitats of high conservation value with features that will slow the flow of water in the upper reaches of the catchment. These benefits will be delivered alongside the conservation and restoration of pasture, where this is important to the local economy or the character of the area, and alongside semi-natural green spaces where they enhance existing recreation networks or provide an alternative visitor destination. The priorities have the potential to contribute to multiple green infrastructure components, including improving recreation provision for local communities and delivering social and economic benefits through flood betterment, as well as providing climate change adaptation and mitigation.

4.155 The corridor priorities can be integrated and delivered alongside each other. Proposals should, wherever possible, seek to contribute to all of the priorities, although the ability to do so will depend on the site-specific circumstance and, in some cases, it may not be possible or desirable to deliver all priorities within the boundaries of a single site when the size of the site or other local factors are taken into account. It may be that only some of the priorities are deliverable, due to the need to balance other considerations, including those set out in policy MLP 26 (Efficient Use of Natural Resources). The ability of an individual development to deliver only a single priority is likely to be exceptional, as the priorities have been carefully designed to be complementary to the local landscape, agricultural uses, geology and other green infrastructure components. Significant deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits, however opportunities to deliver the priorities as part of, or alongside, any final after-use of the site should be fully

considered. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.156 The technical assessment required by policy MLP 10 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 7 (Green Infrastructure) and policies MLP 26 to MLP 40 (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

4.157 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.

4.158 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.

4.159 *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[339] provides useful information about the types of habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory[340] should be referred to when considering the opportunities to link and extend existing habitats.

4.160 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.

4.161 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.

339 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.

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

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

4.162 Tree cover along watercourses and streams, and the restoration of characteristic hedgerow patterns[341] 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.

4.163 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.

4.164 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.

4.165 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.

341 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.

Slow the flow of water in upper reaches of the catchment

4.166 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.[342] It could also improve water quality and riverine habitats, and could help to reduce the social and economic impacts of flooding.

4.167 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:[343]

- 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;
- 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.

4.168 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.

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

343 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)

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

4.169 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.

4.170 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.

4.171 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.[344] 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.

4.172 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.

344 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 West Worcestershire Strategic Corridor

Characteristics of the corridor

4.173 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.

4.174 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).[345]

4.175 Although agricultural land quality in this corridor is relatively low, with only 11.4% of the corridor being best and most versatile agricultural land,[346] arable land uses dominate the Sandstone Estatelands, with some woodland plantations, and grazing dominates the waterside meadows of the Riverside Meadows.

4.176 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".[347] There are multiple Source Protection Zones designated within the corridor.

Sandstone Estateland landscape type (Lower Habberley, Worcestershire)

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

346 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.

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

4.177 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 Area[348] 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.[349] Habitats in the North West Worcestershire Strategic Corridor have the potential to support wintering and passage bird populations of the Severn Estuary SPA and Ramsar site, for example by providing food and shelter at times of flooding or other extreme weather when normal roosting and feeding sites are unavailable. The North West Worcestershire Strategic Corridor also has potential to support migratory fish species of the Severn Estuary SAC and Ramsar site.

4.178 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 mostly 18th and 19th century in origin. These derive from the reorganisation of earlier field systems, the enclosure of formerly unenclosed heathland, field amalgamation and Parliamentary Inclosure.

4.179 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,[350] 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.[351]

4.180 Mineral development in the North West Worcestershire Strategic Corridor would be well located to serve planned growth in Stourport-on-Severn and Kidderminster,[352] as well as Hagley,[353] Kinver[354] and the West Midlands Conurbation. There are good links to the strategic highway network throughout the corridor, although there are some capacity constraints associated with the urban areas of Kidderminster and Stourport. 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.

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

349 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.

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

351 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.

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

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

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

Riverside Meadows landscape type

4.181 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.[355] Minerals development also has the potential to enhance the beneficial use of the Green Belt[356] through providing enhanced public access and recreation opportunities, enhancing landscapes, visual amenity and biodiversity, and improving damaged and derelict land.

4.182 The North West Worcestershire Strategic Corridor contains 3.5%[357] of the county's terrace and glacial sand and gravel resources, 63%[358] of the county's solid sand resources (including 65.7%[359] of the Wildmoor Sandstone Formation which may contain silica sand resources) and four[360] historic building stone sites. Sand and gravel has been worked[361] 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 resources, 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.[362] 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.

355 See policy MLP 27 (Green Belt) and Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, section 13.

356 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 145 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".

357 By area, based on the key and significant resources identified in Worcestershire County Council *(2020) Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, 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).

358 By area, based on the key and significant resources identified in Worcestershire County Council *(2020) Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, 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).

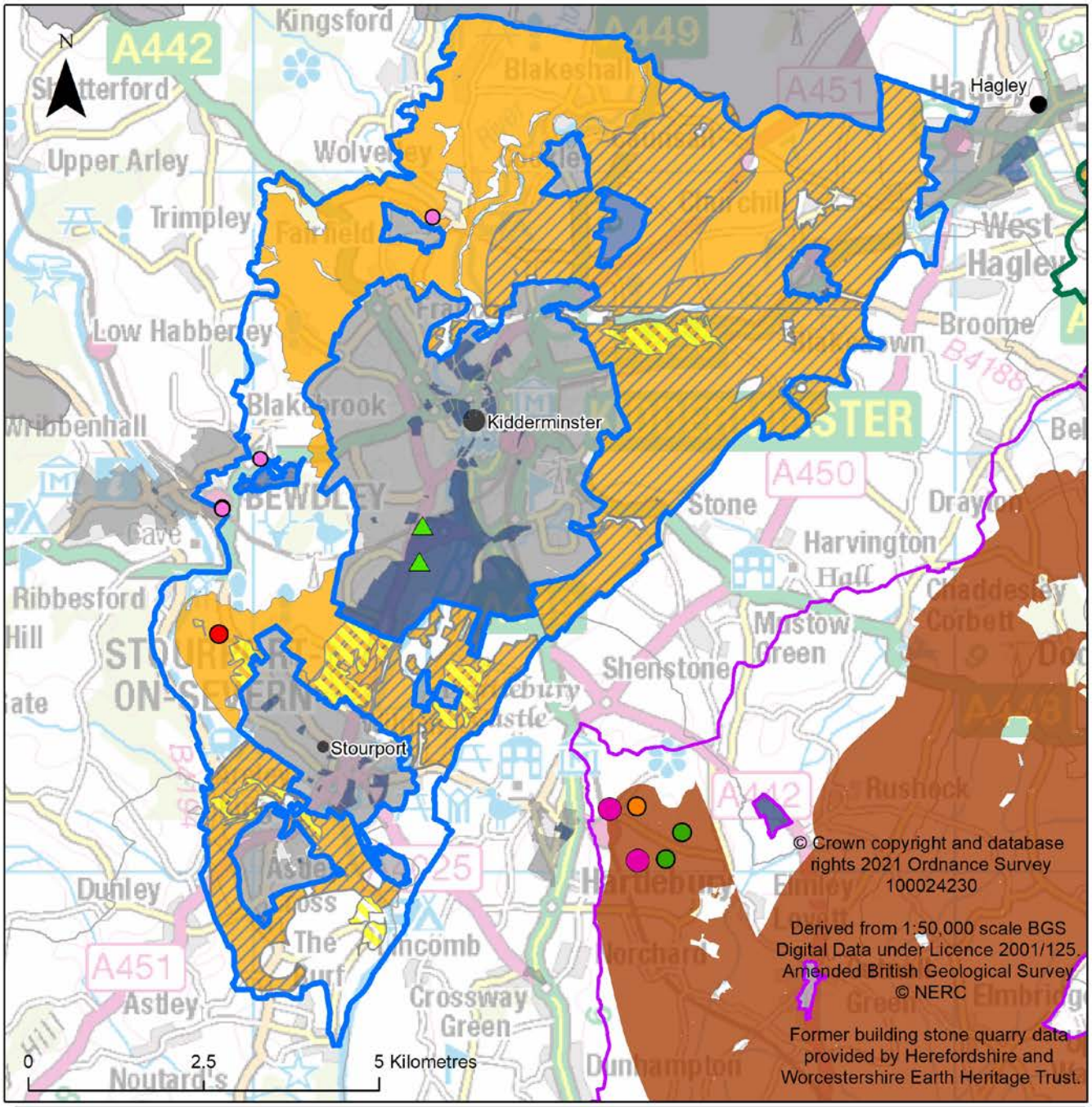
359 By area, based on the Wildmoor Sandstone Formation resource after viability, environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology.*

360 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 viability, environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology.*

361 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.

362 See policy MLP 26 (Efficient Use of Resources).

Figure 4.5. North West Worcestershire Strategic Corridor



Legend

City, Borough and District site allocations

Strategic corridors

North East Worcestershire Strategic Corridor

North West Worcestershire Strategic Corridor

Salwarpe Tributaries Strategic Corridor

Supporting Infrastructure

Plant type

Asphalt

Brickworks

Concrete

Wharfage

Areas of search

Terrace and glacial sand and gravel

Silica sand

Solid sand sand and gravel

Brick clay

Building stone

Settlements

Permitted Minerals Sites

Status

Active

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 11: 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 conservation, 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, where practicable, optimise the contribution the site will make to delivery of the following green infrastructure priorities:

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.

Proposals should demonstrate how the development will deliver these priorities at each stage of the site's life, and why the proposed scheme is considered to be the optimal practicable solution. Where site-specific circumstances and/or other policies in the development plan limit the ability to deliver one or more of the priorities, this should be clearly set out in the assessment.

Where the proposal would make very limited or no contribution to the delivery of these priorities as a whole, this will only be considered appropriate where the economic, social and/or environmental benefits of the proposed development outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.183 Policy MLP 11 sets the priorities for the delivery of multifunctional green infrastructure in the North West Worcestershire Strategic Corridor. The balance of priorities in this strategic corridor is intended to reduce habitat fragmentation and integrate features that will slow the flow of water in the upper reaches of the catchment or increase flood storage and floodplain connectivity in lower parts of the catchment, alongside conserving and enhancing pasture or lowland heathland where these are important to the local economy or the character of the area, or alongside semi-natural green spaces where they enhance existing recreation networks or provide an alternative visitor destination. The priorities have the potential to contribute to multiple green infrastructure components, including improving recreation provision for local communities and delivering social and economic benefits through flood betterment, as well as providing climate change adaptation and mitigation.

4.184 The corridor priorities can be integrated and delivered alongside each other. Proposals should, wherever possible, seek to contribute to all of the priorities, although the ability to do so will depend on the site-specific circumstance and, in some cases, it may not be possible or desirable to deliver all priorities within the boundaries of a single site when the size of the site or other local factors are taken into account. It may be that only some of the priorities are deliverable, due to the need to balance other considerations, including those set out in policy MLP 26 (Efficient Use of Natural Resources). The ability of an individual development to deliver only a single priority is likely to be exceptional, as the priorities have been carefully designed to be complementary to the local landscape, agricultural uses, geology and other

green infrastructure components. Significant deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits, however opportunities to deliver the priorities as part of, or alongside, any final after-use of the site should be fully considered. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.185 The technical assessment required by policy MLP 11 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 7 (Green Infrastructure) and policies MLP 26 to MLP 40 (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

4.186 Tree cover along watercourses and streams, and the restoration of characteristic hedgerow patterns[363] 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.

4.187 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.

4.188 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

4.189 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

363 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.

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.[364] 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.

4.190 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:[365]

- 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.

4.191 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.

4.192 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

4.193 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.

4.194 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,[366] 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.

4.195 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

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

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

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

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.

4.196 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.[367] 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.

4.197 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

4.198 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.

4.199 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.

4.200 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.

4.201 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*[368] provides useful information about the types of habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory[369] should be referred to when considering the opportunities to link and extend existing habitats.

367 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.

368 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.

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

4.202 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.

4.203 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

4.204 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.

4.205 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.

4.206 *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire mineral sites*[370] provides useful information about the types of habitats that might be appropriate and how these can be created and managed. The Worcestershire Habitat Inventory[371] should be referred to when considering the opportunities to link and extend existing habitats.

4.207 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.

Acid grassland habitat

370 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.

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

Principal Timbered Farmlands landscape type (Bredicot)

Salwarpe Tributaries Strategic Corridor

Characteristics of the corridor

4.208 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.

4.209 The landscape character of the Salwarpe Tributaries Strategic Corridor is made up of the rolling lowland Principal Timbered Farmlands 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.[372]

4.210 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.

4.211 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.[373] 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".[374]

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

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

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

Alluvial fenlands

4.212 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 Area[375] 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.[376] Habitats in the Salwarpe Tributaries Strategic Corridor have the potential to support wintering and passage bird populations of the Severn Estuary SPA and Ramsar site, for example by providing food and shelter at times of flooding or other extreme weather when normal roosting and feeding sites are unavailable. The Salwarpe Tributaries Strategic Corridor also has potential to support migratory fish species of the Severn Estuary SAC and Ramsar site.

4.213 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.

4.214 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.[377]

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

376 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.

377 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.

4.215 There are very few sites designated for their geological interest within the Salwarpe Tributaries Strategic Corridor.

4.216 Mineral development in the Salwarpe Tributaries Strategic Corridor would be well located to serve planned growth in the Worcester area and Droitwich Spa,[378] Bromsgrove,[379] Redditch,[380] Kidderminster and Stourport-on-Severn.[381] There are good links to the strategic highway network throughout the corridor, although there may be capacity constraints on some routes. 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.

4.217 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.[382] Minerals development also has the potential to enhance the beneficial use of the Green Belt[383] through providing enhanced public access and recreation opportunities, enhancing landscapes, visual amenity and biodiversity, and improving damaged and derelict land.

4.218 The Salwarpe Tributaries Strategic Corridor contains 16.8%[384] of the county's Mercia Mudstone clay resource and 0.9%[385] of the county's terrace and glacial sand and gravel resources. Brick clay is currently worked at two sites[386] in the Salwarpe Tributaries Strategic Corridor. Nine[387] historic building stone sites are located within the corridor, and the corridor contains 78.4%[388] of the Droitwich Halite Member rock salt resources in the county.

4.219 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.[389] It is therefore likely that parts of a site might be restored to previous levels, but some areas of lower land may be necessary.

4.220 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.

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

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

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

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

382 See policy MLP 27 (Green Belt) and Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, section 13.

383 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 145 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".

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

385 By area, based on the key and significant resources identified in Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, 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).

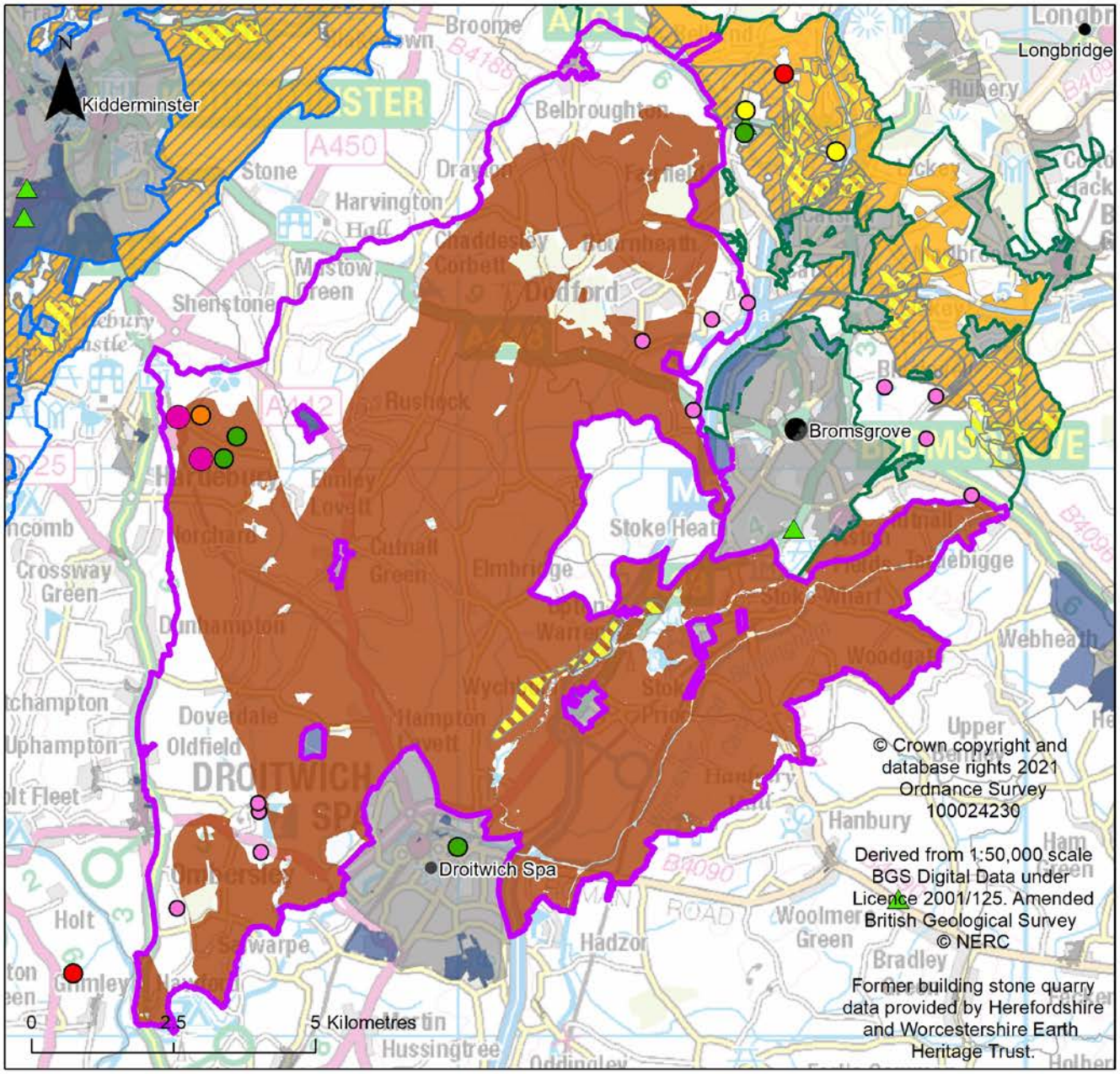
386 New House Farm Quarry and Waresley Quarry. These can be viewed on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals.

387 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 viability, environmental and amenity screening criteria were applied. For further information see Worcestershire County Council (August 2018) *Location of development: screening and site selection methodology.*

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

389 See policy MLP 26 (Efficient 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 12: 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 conservation, 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, where practicable, optimise the contribution the site will make to delivery of the following green infrastructure priorities:

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.

Proposals should demonstrate how the development will deliver these priorities at each stage of the site's life, and why the proposed scheme is considered to be the optimal practicable solution. Where site-specific circumstances and/or other policies in the development plan limit the ability to deliver one or more of the priorities, this should be clearly set out in the assessment.

Where the proposal would make very limited or no contribution to the delivery of these priorities as a whole, this will only be considered appropriate where the economic, social and/or environmental benefits of the proposed development outweigh the benefits of delivering the corridor priorities.

Reasoned justification

4.221 Policy MLP 12 sets the priorities for the delivery of multifunctional green infrastructure in the Salwarpe Tributaries Strategic Corridor. The balance of priorities in this strategic corridor is intended to improve floodplain connectivity, link relic ancient woodlands and integrate features that will slow the flow of water in the upper reaches of the catchment, alongside creating semi-natural green spaces where they enhance existing recreation networks or provide an alternative visitor destination. The priorities have the potential to contribute to multiple green infrastructure components, including improving recreation provision for local communities and delivering social and economic benefits through flood betterment, as well as providing climate change adaptation and mitigation.

4.222 The corridor priorities can be integrated and delivered alongside each other. Proposals should, wherever possible, seek to contribute to all of the priorities, although the ability to do so will depend on the site-specific circumstance and, in some cases, it may not be possible or desirable to deliver all priorities within the boundaries of a single site when the size of the site or other local factors are taken into account. It may be that only some of the priorities are deliverable, due to the need to balance other considerations, including those set out in policy MLP 26 (Efficient Use of Natural Resources). The ability of an individual development to deliver only a single priority is likely to be exceptional, as the priorities have been carefully designed to be complementary to the local landscape, agricultural uses, geology and other green infrastructure components. Significant deviation from the priorities may be justified where there are site-specific opportunities to deliver significant economic, social and/or environmental benefits, however opportunities to deliver the priorities as part of, or alongside, any final after-use of the site should be fully considered. Applicants are encouraged to explore the appropriate balance through pre-application discussion with the Mineral Planning Authority and relevant stakeholders.

4.223 The technical assessment required by policy MLP 12 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 7 (Green Infrastructure) and policies MLP 26 to MLP 40 (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

4.224 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.

4.225 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.

4.226 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.

4.227 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

4.228 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.

4.229 Protecting, restoring and linking relic ancient woodland in appropriate ways[390] 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.

390 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

4.230 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.

4.231 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

4.232 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.[391] 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.

4.233 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:[392]

- 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.

4.234 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.

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

392 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

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

4.235 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.

4.236 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.

4.237 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.[393] 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.

4.238 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.

393 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.[396] 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,[397] and recognises that long-term investment needs influence the requirements for stocks of permitted reserves of industrial minerals.[398] 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 Assessment[399] (using data up to 31st December 2017) 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 documents[400].

396 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 209.

397 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 213.

398 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 214.

399 Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at www.worcestershire.gov.uk/amr.

400 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 13: 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 unacceptable 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 13 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 13 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",[401] 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 Assessment[402].

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

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

Sand and gravel

Policy MLP 14: Scale of Sand and Gravel Provision

Contributing to:

Objectives MO1, MO5

A landbank of at least 7 years will be maintained throughout the plan period, and sufficient productive capacity for sand and gravel will be maintained to at least meet the production guideline in the most recent Local Aggregate Assessment to supply a wide range of sand and gravel materials and products.

a) To indicate the scale of provision required for sand and gravel over the life of the plan:

i. The baseline production guideline for sand and gravel (as calculated in the *"Worcestershire Local Aggregate Assessment (using data up to December 2017)"*) is at least 0.572 million tonnes per year.

ii. To achieve this level of production annually over the life of the plan (2018-2036) would require a total of 10.868 million tonnes of sand and gravel.

iii. A landbank of permitted reserves of at least 7 years at this level would require a total of at least 4.004 million tonnes of sand and gravel.

iv. The baseline permitted reserves of sand and gravel at the end of 2017 stood at 3.465 million tonnes, providing a landbank of 6.06 years.

v. This means that the scale of provision required over the life of the plan is at least 14.872 million tonnes of sand and gravel.

As the production guideline and levels of permitted reserves will vary over the life of the Minerals Local Plan, the most recent Local Aggregate Assessment must be referred to by applicants and decision-makers.

b) To achieve this scale of provision, supply of terrace and glacial sand and gravel and solid sands will be delivered from a combination of extant sites and new developments (including extensions to extant sites):

i. Permitted reserves at extant sites will provide 3.465 million tonnes of sand and gravel.

ii. New sites and alterations or extensions to extant sites will provide at least a further 11.407 million tonnes of sand and gravel:

» Proposals for supply from terrace and glacial sand and gravel mineral allocations will be supported in the Avon and Carrant Brook, Lower Severn, North East Worcestershire, North West Worcestershire and Salwarpe Tributaries Strategic Corridors (see policy MLP 2).

» Proposals for supply from solid sand mineral allocations will be supported in the North East Worcestershire and North West Worcestershire Strategic Corridors (see policy MLP 2).

» As the identification of the strategic corridors was informed by the distribution of sand and gravel resources, and they contain extensive areas of search for sand and gravel, proposals for sand and gravel development on windfall sites either within or outside the strategic corridors will only be supported where they meet the tests set out in policy MLP 3 or policy MLP 4.

Reasoned justification

5.9 The Minerals Local Plan seeks to ensure that there is a steady and adequate supply of sand and gravel from resources within Worcestershire. In order to ensure that a landbank of at least 7 years can and will be maintained throughout the plan period, and that there will be sufficient productive capacity to supply the necessary range of sand and gravel materials and products to various markets, the scale of provision required must be understood.

5.10 Worcestershire's Local Aggregate Assessment sets an annual "production guideline" for the amount of sand and gravel which should be produced, based on consideration of the average level of sales of sand and gravel from Worcestershire[403] alongside other relevant local information and an assessment of supply options. This production guideline set in the baseline Local Aggregate Assessment has informed the calculation of the scale of sand and gravel provision required annually over the life of the plan (2018-2036), and how much is required in order to meet the requirement in national policy for a landbank of permitted reserves of at least 7 years.

5.11 The method used to calculate the production guideline in the baseline Local Aggregate Assessment[404] considered estimates of future demand, and an assessment of supply options:

- Forecasting future demand:
  - » The average level of sales over the last 10 years (0.572 million tonnes) was used as a starting point for forecasting future demand. However, to avoid over-reliance on past trends,[405] other relevant information was also considered to determine whether deviation from this average was required.
  - » The average level of sales over the last three years was considered, as this gives an indication of the most recent sales trend.[406] The three year average sales figure was 19% lower than the 10 year average figure, but this may have been due to sites in the county coming to the end of their lives, rather than an indication of decreased demand.
  - » The sub-regional apportionment derived from the *National and regional guidelines for aggregates provision in England*[407] was considered as an additional guide. The sub-regional apportionment figure was higher than the 10 year average sales figure, but was based on production before the recession and before the introduction of the National Planning Policy Framework, and it was considered that the weight which this should be given was limited.[408]
  - » Levels of planned housing development in Worcestershire were considered. Whilst Local Plan reviews are likely to confirm the continued need for housing growth in the county, the standard method for assessing housing need (autumn 2018) showed the number of houses required annually to be broadly similar to the average number of completions seen over the last 10 years.[409]
  - » Levels of commercial and infrastructure development were considered. Significant levels of commercial and infrastructure

403 The average level of sales of sand and gravel from Worcestershire over the 10 year period from 2008-2017 was 0.572 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 (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at www.worcestershire.gov.uk/amr.

404 Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at www.worcestershire.gov.uk/amr.

405 Weaknesses of the 10 year sales average are set out in paragraph 5.8 of the baseline Local Aggregate Assessment, including following historic supply patterns and economic trends rather than future demands, and that the number of sites may have been depressed due to limited site allocations and policies in the previous Minerals Local Plan.

406 The three year average sales figure (2015-2017) was 19% lower than the 10 year average figure. It was acknowledged that during 2016 and in to 2017 production was slowed at a number of sites which were coming towards the end of their life to ensure continuity as new planning permissions were being sought and implemented, and the sites which were granted planning permission during 2016 did not commence extraction until some way in to 2017, so would not have been able to operate at full capacity to meet demand throughout the year. The three year average was therefore not considered to be a reliable basis on which to deviate from the 10 year average in setting the production guideline.

407 Department for Communities and Local Government https://www.gov.uk/government/publications/national-and-regional-guidelines-for-aggregatesprovision-in-england-2005-to-2020. The sub-regional apportionment for the period 2001-2016 was 92% higher than the 2017 sales figure and this level of production had not been achieved in Worcestershire since 2003. The 2005-2020 figure was not broken down to a sub-regional level, and the national guidelines have not since been updated. The national guidelines were based on production before the recession and before the introduction of the National Planning Policy Framework, and it was therefore considered that it would not be appropriate to increase the production guideline above the 10 year average on the basis of those guidelines or the sub-regional apportionment.

408 The Planning Inspectorate (August 2014) *Report on the Examination into the Northamptonshire Minerals and Waste Local Plan (Northamptonshire Minerals & Waste Development Framework Partial Review)* http://www3.northamptonshire.gov.uk/councilservices/environment-and¬planning/planning/planning-policy/minerals-and-waste-planning-policy/documents/PDF%20Documents/ReportToNorthamptonshireCountyCouncilV3.pdf.

409 There is not a direct correlation between housing completions and the level of sales of sand and gravel. It was acknowledged in the baseline Local Aggregate Assessment that that the anticipated level of housing provision over the next 10 years in adopted Local Plans would represent a 34% increase in comparison to the average number of completions over the previous 10 years, and that further plan reviews are likely to confirm the continued need for housing growth in the county, along with associated infrastructure. However, the standard method for assessing housing need (autumn 2018) showed the number of houses required annually to be broadly similar to the average number of completions seen over the last 10 years. With significant uncertainty over the level of housing development, it was not considered appropriate for the production guideline to be adjusted on the basis of projected housing numbers.

development are proposed in Local Plans and Strategic Economic Plans, however it is difficult to quantify whether this is a likely to represent a significant increase in demand over the significant levels of commercial and infrastructure development in the county in previous years.[410] [411]

  - None of these factors was considered sufficient or reliable enough to warrant deviation from the 10 year average in the baseline aggregate assessment, but this may change in future Local Aggregate Assessments.

- Supply options and constraints were assessed:
  - The available estimates of the sand and gravel resource within Worcestershire which is not affected by significant constraints was considered,[412] which indicated that a total of 3,222-3,871 million tonnes of unsterilised resource may be available in Worcestershire.
  - The number and status of extant sites was considered, including the levels of permitted reserves they contain. Three out of the four extant sites at the end of 2017 were active (in production for some time during the year), and none of the sites had planning conditions which would restrict their productive capacity.
  - Consideration was also given to any planning applications pending decision, the number of remaining site allocations and whether or not they are likely to be brought forward, and any pre-application discussions. Whilst there were few applications pending and few remaining site allocations, pre-application discussions indicated that there is interest in developing further sand and gravel workings in Worcestershire in the near future.
  - The limited data available on imports and exports of sand and gravel indicates that Worcestershire is a net exporter of sand and gravel, rather than reliant on being reliant on imports.
  - Consideration was given to the potential to increase supply from secondary and recycled materials, concluding that the availability of such materials tends to remain broadly consistent at around 28-29% of total consumption and that it is unlikely that they will make a significantly greater contribution to aggregate supply.

5.12 The baseline Local Aggregate Assessment concluded that whilst there was no evidence that demand for sand and gravel was likely to decrease, there was also not sufficient evidence to suggest that the production guideline should be increased above the 10 year average at that time. The production guideline for sand and gravel identified by the baseline Local Aggregate Assessment was therefore 0.572 million tonnes per annum.

5.13 The Local Aggregate Assessment is produced annually and the methods used and the conclusions reached may alter in future iterations of the Local Aggregate Assessment to reflect the latest policy and guidance, and the latest available information about the levels of sales, demand factors, and the balance between supply and demand. The production guideline is therefore very likely to vary through the life of the plan, and applicants and decision-makers should refer to the production guideline and scale of provision figures in the most recent Local Aggregate Assessment.

Processing plant at Ryall House Farm sand and gravel working

410 Significant levels of commercial and infrastructure development are proposed in Local Plans and Strategic Economic Plans. However, there is a lack of data to be able to estimate the level of demand for aggregates which such developments might create.

411 There were no Nationally Significant Infrastructure Projects planned or underway within Worcestershire, but it was acknowledged that the HS2 project could result in significant demand for aggregates. Whilst demand from that project is most likely to be met from mineral planning authorities closest to the line's route, the level of demand for this and other types of development is likely to require additional aggregate extraction in Worcestershire, although it was not possible to quantify the extent of any such additional requirements.

412 The *"Sub-Regional Apportionment of Aggregates Provision in the West Midlands Region 2005 – 2020 Consultation paper 17-02-2010"* document prepared for the West Midlands Regional Assembly by Land Use Consultants in February 2010, and Worcestershire County Council (April 2019) *Analysis of Mineral Resources.*

Excavating sand and gravel at Ryall's Court Farm Quarry

Provision over the life of the plan

5.14 The Minerals Local Plan has been developed to be sufficiently flexible to adapt to changes in the production guideline, but the baseline Local Aggregate Assessment provides a good indication of the likely minimum scale of provision required for sand and gravel over the life of the plan.

5.15 Supplying 0.572 million tonnes of sand and gravel each year over the life of the plan (2018-2036) will require a total of 10.868 million tonnes of sand and gravel. In addition to this, national policy requires a landbank of permitted reserves of at least 7 years to be maintained for sand and gravel, which will require a total of 4.004 million tonnes of sand and gravel. Together, this means the scale of provision required for sand and gravel over the life of the plan is at least 14.872 million tonnes.

5.16 The baseline figures set out the minimum amount of provision which is likely to be required, and they do not impose a cap on the amount of mineral development which can take place in Worcestershire. The direction of travel nationally and locally is towards greater levels of housing and infrastructure growth, and it is noted that the government confirmed in February 2020 that the HS2 high-speed rail project should go ahead which is likely to lead to greater demand for sand and gravel from throughout the West Midlands to supply both the HS2 project and maintain supply to other developments. This indicates a likelihood that demand for sand and gravel will increase from the baseline. This will be considered in future iterations of the Local Aggregate Assessment.

5.17 At the end of 2017, there were four sand and gravel sites in Worcestershire:

- three sites were "active" (in production for some time during the year); and
- one was "inactive" (worked in the past and contains permitted reserves)[413].

Two of these sites contain terrace and glacial sand and gravel resources and are located within the Lower Severn Strategic Corridor, and two of the sites contain solid sand resources and are located within the North East Worcestershire Strategic Corridor.

413 This site classed its permitted reserves as being for "non-aggregate uses".

Ripple sand and gravel quarry

5.18 The permitted reserves of sand and gravel at these sites at the end of 2017 amounted to 3.465 million tonnes. Based on the production guideline of 0.572 million tonnes per annum, the landbank for sand and gravel in Worcestershire at the end of 2017 stood at 6.06 years, less than the minimum of 7 years required in national policy.

5.19 Supply from these existing permitted reserves will be a key part in maintaining a steady and adequate supply of sand and gravel. However, the Minerals Local Plan also needs to enable the provision of at least a further 11.407 million tonnes[414] of sand and gravel over the life of the plan to maintain both annual supply and a landbank of at least 7 years to 2036 and beyond.

Provision from new sites and alterations and extensions to extant sites

5.20 New sites, and alterations and extensions to existing sites will be crucial to delivering a steady and adequate supply of sand and gravel over the life of the plan.

5.21 Policy MLP 5 provides support to enable any necessary alterations to the development permitted at extant sites, subject to other parts of the Development Plan being satisfactorily addressed. Whilst some alterations to planning permissions for extant sites will not result in significant changes, some alterations may enable more efficient working or processing of minerals to support productive capacity, or may increase the amount of sand and gravel reserve permitted for extraction at a particular site.

5.22 Mineral development on new sites, and extensions to existing sites (i.e. development beyond a site's existing red line boundary) within the strategic corridors will be facilitated by the identification of mineral allocations and supported by policies MLP 2 and MLP 3.

- Specific sites and preferred areas for sand and gravel are likely to be allocated in the Mineral Site Allocations Development Plan Document, as multiple sites (for both terrace and glacial sand and gravel, and solid sand resources) have been put forward for consideration.
- Areas of search[415] have been allocated for sand and gravel as shown on Figure 4.1 (Key diagram) and defined on the Policies Map[416].
    - » Areas of search for terrace and glacial sand and gravel are concentrated within the Avon and Carrant Brook, Lower Severn, North East Worcestershire and North West Worcestershire Strategic Corridors, with a small number in the Salwarpe Tributaries Strategic Corridor.
    - » Areas of search for solid sand are located in the North East Worcestershire and North West Worcestershire Strategic Corridors.

5.23 Given the extent of these allocations across both types of sand and gravel resources, development proposals for sand and gravel over the life of the plan are expected to be on mineral allocations. Proposals for sand and gravel development on windfall sites either within or outside the strategic corridors will only be supported where they meet the tests set out in policy MLP 3 or policy MLP 4.

414 Figure based on the baseline production guideline of 0.607 million tonnes, but the plan includes sufficient flexibility to adapt to changes in the production guideline.

415 100 areas of search are allocated for sand and gravel within the strategic corridors, representing 56.6% (by area) of the key and significant terrace and glacial sand and gravel resources and 82.75% (by area) of the key and significant solid sand resources in Worcestershire.

416 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.

Policy MLP 15: Delivering a 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 a wide range of sand and gravel materials and products to be maintained or enhanced.

Reasoned justification

5.24 Policy MLP 15 requires an appropriate level of technical assessment to be submitted with each application for sand and gravel development. 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 will make towards maintaining or enhancing Worcestershire's landbank of permitted sand and gravel reserves, and/or productive capacity.

Contributing to landbank

5.25 The amount of resource which is permitted to be worked at an individual site will determine the contribution the site makes to the landbank as a whole. Site-specific circumstances and/or other policies in the development plan (including other policies in the Minerals Local Plan) may limit the total amount which can be extracted without causing unacceptable harm, whilst ensuring delivery of high-quality restoration and after-use is possible.

5.26 The technical assessment should clearly set out the types of resources proposed to be worked. If the site contains both solid sand resources and terrace and glacial sand and gravel resources, it should give an indication of the total amount of each type of deposit which would be worked.

5.27 A low landbank may be an indicator that suitable applications should be permitted as a matter of importance to ensure the steady and adequate supply of sand and gravel. However, there is no maximum landbank level, and each application will be considered on its own merits. It may also be necessary to have a landbank of more than 7 years to allow for the fact that mineral developments can take a significant amount of time to progress from identifying a site to that site contributing to supply, to ensure that sufficient supply can be maintained for a wide range of materials, or to ensure that a large landbank at very few sites does not stifle competition.

Contributing to productive capacity

5.28 In addition to maintaining a landbank of permitted reserves, the Mineral Planning Authority needs to ensure sufficient productive capacity is maintained in the county for a wide range of materials and products.

5.29 Worcestershire's overall productive capacity results from the number of active sites and their combined capacity to extract, process and sell minerals. Whilst there is some overlap in the uses and markets which can be supplied from sites working terrace and glacial deposits and sites working solid sand deposits (see paragraphs 2.13-2.18), each site is likely to contain resources with different properties, and sufficient productive capacity needs to be maintained for a range of materials to supply a variety of markets and uses. The technical assessment required by policy MLP 15 should clearly set out the types of resources proposed to be worked, and indicate the range of materials and products which it is anticipated will be produced.

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

5.30 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.

5.31 Worcestershire's productive capacity for sand and gravel is therefore likely to be maintained and enhanced through a combination of additional sites on mineral allocations and more efficient plant, machinery and working practices at existing sites. Maintaining sufficient productive capacity to supply a variety of markets and end uses is likely to require sites within both the solid sands and the terrace and glacial sand and gravel resources across the five strategic corridors. This is supported by the allocation of 100 areas of search[417] for sand and gravel within the strategic corridors, and specific sites and preferred areas for sand and gravel are likely to be allocated in the Mineral Site Allocations Development Plan Document as multiple sites have been put forward for consideration.

5.32 Policy MLP 15 requires proposals to demonstrate the contribution they will make to maintaining or enhancing Worcestershire's productive capacity. The assessment should include the anticipated throughput and lifespan of a new site or extended working, the anticipated impact of new plant or amending planning conditions at existing sites, or the market or end use for which the mineral is needed.

5.33 Even where there is considered to be sufficient productive capacity for sand and gravel supply overall, new sites and amendments or extensions to existing sites which contribute to maintaining or enhancing productive capacity will be supported, as they will help to ensure the resilience of the minerals supply chain in Worcestershire. Where a site would contribute to productive capacity for particular uses or specifications, this should be set out in the technical assessment and will be given weight in decision-making.

417 100 areas of search are allocated for sand and gravel within the strategic corridors, representing 56.6% (by area) of the key and significant terrace and glacial sand and gravel resources and 82.75% (by area) of the key and significant solid sand resources in Worcestershire.

Crushed rock

Policy MLP 16: Scale of Crushed Rock Provision

Contributing to:

Objectives MO1, MO5

The Minerals Local Plan seeks to secure the steady and adequate supply of crushed rock. Due to the range of constraints on Worcestershire's crushed rock resources, it seeks to achieve this through:

- continued importation of crushed rock under the Managed Aggregate Supply System and on-going consideration of this under the Duty to Cooperate; and
- enabling a contribution to supply from indigenous resources with a view to achieving and maintaining a landbank of at least 10 years, and providing sufficient productive capacity for crushed rock to supply a wide range of crushed rock materials and products.

a) To indicate the scale of provision required for crushed rock from indigenous resources during the life of the plan:

i. The sub-regional apportionment for Worcestershire derived from the *"National and regional guidelines for aggregates provision in England 2001-2016"* provides an indicative provision figure (based on the scale of need and Worcestershire's ability to produce crushed rock) of 0.163 million tonnes per year.

ii. To achieve this level of production annually over the lifetime of the plan (2018-2036) would require a total of 3.097 million tonnes of crushed rock.

iii. A landbank of permitted reserves of at least 10 years at this level would require a total of at least 1.630 million tonnes of crushed rock.

iv. The baseline permitted reserves of crushed rock at the end of 2017 stood at 0 (zero) tonnes, resulting in a landbank of 0 years.

v. This means that the scale of provision required over the life of the plan is at least 4.727 million tonnes of crushed rock.

When considering the scale of provision required for crushed rock, applicants and decision-makers should refer to the production guideline in the most recent Local Aggregate Assessment as well as the sub-regional apportionment.*

b) To achieve this scale of provision, or as great a contribution towards it as possible, supply of crushed rock will be delivered from new developments on windfall sites outside the strategic corridors (see policy MLP 4).

* The sub-regional apportionment gives an indication of the scale of development required, although the apportionment has not been updated for the period beyond 2020. The Local Aggregate Assessment considers the rolling average of 10 years' sales data and other relevant local information to set a production guideline. As such, the production guideline and levels of permitted reserves may vary over the life of the Minerals Local Plan.

Reasoned justification

5.34 The Minerals Local Plan seeks to ensure that there is a steady and adequate supply of crushed rock in Worcestershire. However, there has been no crushed rock working in Worcestershire since 2010 and, at the end of 2017, there were no active crushed rock sites and no landbank of permitted reserves for crushed rock in Worcestershire,[418] and there are very few crushed rock resources in Worcestershire which are not affected by significant viability, environmental or amenity constraints.[419]

5.35 A steady and adequate supply of crushed rock is therefore unlikely to be provided wholly by indigenous production in Worcestershire. Ongoing discussions under the Duty to Cooperate will be required with surrounding Mineral Planning Authorities and Aggregate Working Parties to ensure there is ongoing ability for other mineral planning authorities to provide crushed rock under the Managed Aggregate Supply System.

5.36 However, whilst the Minerals Local Plan recognises that production from within Worcestershire may be challenging, that the allocation of specific sites and/or preferred areas for crushed rock is unlikely as no sites have been put forward for consideration, and that the range of constraints on Worcestershire's crushed rock resources means that no areas of search for crushed rock have been allocated, policy MLP 16 seeks to support and enable crushed rock development within Worcestershire. In order to support delivery of a landbank of at least 10 years, and to enable sufficient productive capacity for crushed rock to meet need and to supply the necessary range of materials and products to various markets, the scale of provision required must be understood.

Production guideline

5.37 Worcestershire's Local Aggregate Assessment sets an annual "production guideline" for the amount of crushed rock which should be produced, based on consideration of the average level of sales of crushed rock from Worcestershire[420] alongside other relevant local information and an assessment of supply options.

5.38 The method used to calculate the production guideline in the baseline Local Aggregate Assessment[421] considered estimates of future demand, and an assessment of supply options:

- Forecasting future demand:
  - The average level of sales over the last 10 years (0.014 million tonnes) was used as a starting point for forecasting future demand. However, to avoid over-reliance on past trends,[422] other relevant information was also considered to determine whether deviation from this average was required.
  - The average level of sales over the last three years was considered, as this gives an indication of the most recent sales trend.[423] The three year average was 0 tonnes, as there were no operational crushed rock sites in Worcestershire during this period.
  - The sub-regional apportionment derived from the *National and regional guidelines for aggregates provision in England*[424] was considered as an additional guide. The sub-regional apportionment was more than 10 times higher than the 10 year average sales figure, but was based on production before the recession and before the introduction of the National Planning Policy Framework, and it was considered that the weight which this should be given in determining the production guideline was limited.[425]

418 No sites for crushed rock working have been put forward in response to five calls for sites between 2014 and 2020 during the development of the Minerals Local Plan and Mineral Site Allocations Development Plan Document.

419 For further information about future crushed rock supply and the constraints on the rock resources in Worcestershire, see Figure 2.4a and paragraphs 2.37-2.39.

420 The average level of sales of crushed rock from Worcestershire over the 10 year period from 2008-2017 was 0.014 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 (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at www.worcestershire.gov.uk/amr.

421 Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)*, available at www.worcestershire.gov.uk/amr.

422 Weaknesses of the 10 year sales average are set out in paragraph 6.7 of the baseline Local Aggregate Assessment, including following historic supply patterns and economic trends rather than future demands, and that the number of sites may have been depressed due to limited site allocations and policies in the previous Minerals Local Plan.

423 The three year average sales figure (2015-2017) was 0 tonnes. The three year average was considered to indicate that it may be appropriate to decrease the production guideline to less than the 10 year average.

424 Department for Communities and Local Government https://www.gov.uk/government/publications/national-and-regional-guidelines-for-aggregatesprovision-in-england-2005-to-2020. The sub-regional apportionment figure of 0.163 million tonnes for crushed rock had not been achieved in Worcestershire since 2002. The 2005-2020 figure was not broken down to a sub-regional level, and the national guidelines have not since been updated. The national guidelines were based on production before the recession and before the introduction of the National Planning Policy Framework, and it was therefore considered that it would not be appropriate to increase the production guideline above the 10 year average on the basis of those guidelines or the sub-regional apportionment.

425 The Planning Inspectorate (August 2014) *Report on the Examination into the Northamptonshire Minerals and Waste Local Plan (Northamptonshire Minerals & Waste Development Framework Partial Review).*

- Levels of planned housing development in Worcestershire were considered as an indicator of future demand. Whilst Local Plan reviews are likely to confirm the continued need for housing growth in the county, the standard method for assessing housing need (autumn 2018) showed the number of houses required annually to be broadly similar to the average number of completions seen over the last 10 years.[426]
- Significant levels of commercial and infrastructure development are proposed in Local Plans and Strategic Economic Plans, however it is difficult to quantify whether this is a likely to represent a significant increase in demand over the significant levels of commercial and infrastructure development in the county in previous years.[427] [428]

- Supply options and constraints were assessed:
  - The available estimates of the crushed rock resources within Worcestershire which are not affected by significant constraints were considered,[429] which indicated that a total of between 1.47 and 427.58 million tonnes of unsterilized resource may be available in Worcestershire.
  - The number and status of extant sites was considered, including levels of permitted reserves they contain. There were no sites with permitted reserves of crushed rock at the end of 2017.
  - Consideration was also given to the fact that there were no planning applications pending decision, and that there were no remaining site allocations for crushed rock in the 1997 Minerals Local Plan. No sites for crushed rock had been put forward in response to calls for sites, and no pre-application discussions had been held. This was considered to be a strong indication that there was limited interest in developing crushed rock workings in Worcestershire in the immediate future.
  - The limited data available on imports and exports of crushed rock indicates that Worcestershire is a net importer of crushed rock. With no extant sites, permitted reserves or applications pending at the end of 2017, Worcestershire is likely to be reliant on crushed rock imports for at least the near future.
  - Further consideration was given to the constraints[430] on the crushed rock resources in Worcestershire and the reliance on imports from other mineral planning authorities. Discussions were held under the Duty to Cooperate about Worcestershire's likely difficulty in providing crushed rock.

5.39 The baseline Local Aggregate Assessment concluded that whilst there was no evidence that demand for crushed rock was likely to decrease, delivery constraints and lack of sites and proposals indicated that the 10 year average did not provide a suitable production guideline for crushed rock. Discussions under the Duty to Cooperate concluded that Worcestershire's production guideline for crushed rock should be reduced to 0 (zero) tonnes, but that the Minerals Local Plan should provide a policy framework to enable crushed rock development to take place, recognising the national policy requirement for the maintenance of a landbank of at least 10 years for crushed rock.[431]

426 There is not a direct correlation between housing completions and the level of sales of crushed rock. However, it was acknowledged that the anticipated level of housing provision over the next 10 years in adopted Local Plans would represent a 34% increase in comparison to the average number of completions over the previous 10 years, and that further plan reviews are likely to confirm the continued need for housing growth in the county, along with associated infrastructure. However, the standard method for assessing housing need (autumn 2018) showed the number of houses required annually to be broadly similar to the average number of completions seen over the last 10 years. With significant uncertainty over the level of housing development, it was not considered appropriate for the production guideline to be adjusted on the basis of projected housing numbers.

427 Significant levels of commercial and infrastructure development are proposed in Local Plans and Strategic Economic Plans. However, there is a lack of data to be able to estimate the level of demand for aggregates which such developments might create.

428 There were no Nationally Significant Infrastructure Projects planned or underway within Worcestershire, but it was acknowledged that the HS2 project could result in significant demand for aggregates. Whilst demand from that project is most likely to be met from mineral planning authorities closest to the line's route, the level of demand for this and other types of development is likely to require additional aggregate extraction in Worcestershire, although it was not possible to quantify the extent of any such additional requirements.

429 The *"Sub-Regional Apportionment of Aggregates Provision in the West Midlands Region 2005 – 2020 Consultation paper 17-02-2010"* document prepared for the West Midlands Regional Assembly by Land Use Consultants in February 2010, and Worcestershire County Council (April 2019) *Analysis of Mineral Resources.*

430 The baseline Local Aggregate Assessment noted that although the constraints on the crushed rock resources in Worcestershire are not in themselves an absolute bar on crushed rock development, the combination of the significant level of environmental protection imposed through legislation and policy tests together meant that crushed rock is unlikely to be commercially attractive for the foreseeable future.

431 See Worcestershire County Council (June 2020) *Worcestershire Local Aggregate Assessment (using data covering the period up to 31/12/2017)* and 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.

5.40 The Local Aggregate Assessment is produced annually, and the methods used and the conclusions reached may alter in future iterations of the Local Aggregate Assessment to reflect the latest policy and guidance, and the latest available information about the levels of sales, demand factors, and the balance between supply and demand. The production guideline may therefore vary through the life of the plan. The Minerals Local Plan has been developed to be sufficiently flexible to adapt to such changes, but applicants and decision makers should refer to the production guideline and scale of provision figures in the most recent Local Aggregate Assessment.

Provision over the life of the plan

5.41 The Minerals Local Plan has been developed to be sufficiently flexible to adapt to changes in the production guideline, but whilst the baseline production guideline of zero provides a good indication of the level of production likely to be achieved in the near future, it does not provide an indication of the level of provision which may be required in order to contribute towards meeting market demands. Alternatives were therefore considered to give an indication of the scale of provision which may be required during the life of the plan:

- Imports: As crushed rock has not been produced in the county for a number of years, the level of imports into the county would provide a clear picture of the level of demand. However, there is very little information available about imports of crushed rock, and the data which is available (set out in paragraph 2.36 and table 2.2) does not represent a complete dataset and caution must be applied in relying on that data. In addition, simply considering demand factors alone would not take account of the constraints on Worcestershire's ability to supply that demand.
- Sub-regional apportionment: Whilst the sub-regional apportionment for Worcestershire derived from the *"National and regional guidelines for aggregates provision in England 2001-2016"* is somewhat dated, and the guidelines are not currently being updated, they take account of both demand factors and supply constraints, and therefore provide the best indication at the time of developing the Minerals Local Plan of the scale of provision which may be required from within Worcestershire, at 0.163 million tonnes per year.

5.42 Supplying 0.163 million tonnes of crushed rock each year over the life of the plan (2018-2036) will require a total of 3.097 million tonnes of crushed rock. In addition to this, national policy requires a landbank of permitted reserves of at least 10 years to be maintained for crushed rock, which will require a total of at least 1.630 million tonnes of crushed rock. Together, this means the scale of provision required for crushed rock over the life of the plan is at least 4.727 million tonnes.

5.43 Whilst the constraints surrounding Worcestershire's crushed rock resources[432] mean that crushed rock working at a significant scale is considered unlikely during the life of the plan, the figure for the scale of provision required does not impose a cap on the amount of crushed rock development which can take place in Worcestershire. The direction of travel nationally and locally is towards greater levels of housing and infrastructure growth, and it is noted that the government confirmed in February 2020 that the HS2 high-speed rail project should go ahead which is likely to lead to greater demand for sand and gravel from throughout the West Midlands to supply both the HS2 project and maintain supply to other developments. This indicates a likelihood that demand for sand and gravel will increase from the baseline. This will be considered in future iterations of the Local Aggregate Assessment. When considering the scale of provision required for crushed rock, applicants and decision-makers should refer to the sub-regional apportionment figure alongside the production guideline and scale of provision figures in the most recent Local Aggregate Assessment.

432 See Chapter 2: Portrait of Worcestershire.

Importation of crushed rock

5.44 The Managed Aggregate Supply System[433] 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.

5.45 Policy MLP 16 acknowledges that the continued importation of crushed rock under the Managed Aggregate Supply System will be an important part of maintaining a steady and adequate supply of crushed rock resources in Worcestershire, but that there is an on-going need to consider this under the Duty to Cooperate.

5.46 The baseline Local Aggregate Assessment highlights that the majority of demand for crushed rock in Worcestershire over recent years has been met by increased imports of crushed rock from outside the county, and relevant Mineral Planning Authorities and Aggregate Working Parties have indicated that supplying Worcestershire's demand for crushed rock can continue to be accommodated. However, it is possible that this could change during the life of the plan.

5.47 Any significant changes in the ability of surrounding Mineral Planning Authorities to accommodate supplying Worcestershire's demand for crushed rock will influence the balance of supply and demand calculated in the annual Local Aggregate Assessment, and may result in the need for a partial or full review of the Minerals Local Plan (see monitoring indicators for objective MO 1 in Chapter 8).

Provision from new sites

5.48 At the end of 2017, there were no sites with permitted reserves for crushed rock in Worcestershire, and therefore no landbank of permitted reserves. New sites for crushed rock will therefore be crucial if Worcestershire is to contribute towards the steady and adequate supply of crushed rock from indigenous resources over the life of the plan.

5.49 However, the allocation of specific sites and/or preferred areas for crushed rock is unlikely as no sites have been put forward for consideration, no crushed rock resources occur within the strategic corridors, and the range of constraints on Worcestershire's crushed rock resources means that no areas of search for crushed rock have been allocated. Proposals for crushed rock development over the life of the plan will therefore be supported on windfall sites outside the strategic corridors where they meet the tests set out in policy MLP 4.

Broadway Quarry, near Fish Hill

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

Policy MLP 17: Delivering a 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 a wide range of crushed rock materials and products to be maintained or enhanced.

Reasoned justification

5.50 Policy MLP 17 requires an appropriate level of technical assessment to be submitted with each application for crushed rock development. 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. The assessment should differentiate between different phases of the development, in order to clearly demonstrate the contribution the proposed development would make towards increasing or maintaining Worcestershire's landbank of permitted crushed rock reserves and/or productive capacity.

Contributing to landbank

5.51 The amount of resource which is permitted to be worked at an individual site will determine the contribution the site makes to the landbank as a whole. Site-specific circumstances and/or other policies in the development plan (including other policies in the Minerals Local Plan) may limit the total amount which can be extracted without causing unacceptable harm, whilst ensuring delivery of high-quality restoration and after-use is possible.

5.52 The technical assessment should clearly set out the types of resources proposed to be worked. If the site contains more than one type of rock, it should give an indication of the total amount of each type of deposit which would be worked.

5.53 A low landbank may be an indicator that suitable applications should be permitted as a matter of importance to ensure the steady and adequate supply of crushed rock. However, there is no maximum landbank level, and each application will be considered on its own merits. It may also be necessary to have a landbank of more than 10 years to allow for the fact that mineral developments can take a significant amount of time to progress from identifying a site to that site contributing to supply, to ensure that sufficient supply can be maintained for a wide range of materials, or to ensure that a large landbank at very few sites does not stifle competition.

Contributing to productive capacity

5.54 In addition to maintaining a landbank of permitted reserves, productive capacity for a wide range of materials and products is required.

5.55 Worcestershire's overall productive capacity for crushed rock will result from the number of active sites and their combined capacity to extract, process and sell minerals. The technical assessment required by policy MLP 17 should clearly set out the types of resources proposed to be worked, and indicate the range of materials and products which it is anticipated will be produced.

Extracting crushed rock at Fish Hill Quarry

5.56 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. If there are 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.

5.57 Worcestershire's productive capacity for crushed rock will be maintained and enhanced through new development on windfall sites outside the strategic corridors, and could also be enhanced by more efficient plant, machinery and working practices at any existing sites over the life of the plan.

5.58 Policy MLP 17 requires proposals to demonstrate the contribution they will make to maintaining or enhancing Worcestershire's productive capacity. The assessment should include the anticipated throughput and lifespan of a new site or extended working, the anticipated impact of new plant or amending planning conditions at existing sites, and/or the market or end use for which the mineral is needed.

5.59 Even where there is considered to be sufficient productive capacity for crushed rock supply overall, proposals which contribute to maintaining or enhancing productive capacity will be supported, as they will help to ensure the resilience of the minerals supply chain in Worcestershire.

5.60 Where a site would contribute to productive capacity for particular uses or specifications, this should be set out in the technical assessment and will be given weight in decision-making.

Industrial minerals supply

5.61 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 will influence landbank requirements for these minerals.

Brick clay and clay products

Policy MLP 18: Scale of Brick Clay Provision

Contributing to:

Objectives MO1, MO5

A stock of permitted reserves will be maintained to support new or existing plant, and sufficient productive capacity will be maintained to supply a range of brick clay and clay products, taking account of the need for provision of brick clay from a number of different sources to enable appropriate blends to be made.

a) To indicate the scale of provision required for brick clay over the life of the plan:

   i. The baseline 10 year average of sales of brick clay from Worcestershire was 0.126 million tonnes per year.

   ii. To achieve this level of production over the life of the plan (2018-2036) would require a total of 2.394 million tonnes of brick clay.

b) Steady and adequate supply of brick clay and clay products will be delivered from a combination of extant sites and new developments (including extensions to extant sites):

   i. The baseline stock of permitted reserves at extant sites is likely to be adequate to maintain provision of at least 0.126 million tonnes per year throughout the plan period.

   ii. New sites and alterations or extensions to extant sites may contribute to the security of productive capacity and/or support investment in or maintenance of new or existing plant and equipment:

      » Proposals for supply from brick clay allocations (Mercia Mudstone Group resources) will be supported in the Avon and Carrant Brook, Lower Severn and Salwarpe Tributaries Strategic Corridors (see policy MLP 3).

      » As the identification of the strategic corridors was informed by the distribution of brick clay resources, and they contain extensive areas of search for brick clay, proposals for brick clay development (whether Mercia Mudstone Group or other geological deposits) on windfall sites either within or outside the strategic corridors will only be supported where they meet the tests set out in policies MLP 3 or 4.

Reasoned justification

Scale of provision

5.62 Worcestershire plays a significant role in the supply of brick clay and clay products both locally and nationally, and the Minerals Local Plan seeks to ensure that there continues to be a steady and adequate supply of brick clay and clay products from resources within Worcestershire. In order to ensure that a stock of permitted reserves will be maintained to support new or existing plant, and sufficient productive capacity will be maintained to supply a range of brick clay and clay products, taking account of the need for provision of brick clay from a number of different sources to enable appropriate blends to be made, the scale of provision required must be understood.

5.63 Sales of brick clay from Worcestershire are approximately 0.126 million tonnes per annum.[434] At the end of 2017 there were two clay sites in Worcestershire, each with associated brickworks. These clay workings have a stock of permitted reserves sufficient to maintain provision of at least 0.126 million tonnes per year throughout the life of the plan.[435] However, the direction of travel nationally and locally is towards greater levels of housing and infrastructure growth, and therefore this is likely to be the minimum level of provision which will need to be made for brick clay and the baseline figures do not impose a cap on the amount of mineral development which can take place in Worcestershire.

5.64 Both of the existing sites and brickworks in Worcestershire are run by the same operator and are in close proximity in the west of the Salwarpe Tributaries Strategic Corridor. The overall security of Worcestershire's productive capacity could therefore be particularly vulnerable to commercial decisions or natural events at any individual site. In addition, producing a variety of types of brick and clay products with different colours, finishes and technical specifications required by the market can require the blending of clays from a number of sources to obtain the durability or colours and textures demanded. The proximity of the two existing sites in Worcestershire means they are likely to provide very similar clay resources.

5.65 Additional sites may therefore be required to ensure the security of productive capacity in the county, and further permitted reserves may be required to support investment in or maintenance of new or existing plant and equipment, or to enable appropriate blends to be made.

Provision from new sites and alterations and extensions to extant sites

5.66 Existing sites will be crucial to delivering a steady and adequate supply of brick clay and clay products over the life of the plan. Policy MLP 5 provides support to enable any necessary alterations to the development permitted at extant sites, subject to other parts of the Development Plan being satisfactorily addressed. Whilst some alterations to planning permissions for extant sites will not result in significant changes, some alterations may enable more efficient working or processing of minerals to support productive capacity, or may increase the amount of clay reserves permitted for extraction at a particular site. Such alterations to existing permissions may support investment in associated plant and equipment.

5.67 The allocation of specific sites and/or preferred areas for brick clay is unlikely, as no sites have been put forward for consideration. The majority of development proposals for new sites, and extensions to existing sites (i.e. development beyond a site's existing red line boundary) for brick clay over the life of the plan are expected to be on areas of search. 13 areas of search have been allocated for brick clay (Mercia Mudstone Group), as shown on Figure 4.1 (Key diagram) and defined on the Policies Map[436] and development proposals in areas of search are supported by policy MLP 3. The areas of search for brick clay are concentrated within the Salwarpe Tributaries, Lower Severn, and Avon and Carrant Brook Strategic Corridors, with less extensive areas of search for brick clay in the North East Worcestershire Strategic Corridor.

434 10 year average based on *Mineral extraction in Great Britain, Business Monitor PA1007* reports for 2005 to 2014. This is the most recent data available. 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.

435 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.

436 13 areas of search are allocated for brick clay within the strategic corridors, representing 20.7% (by area) of the screened Mercia Mudstone Group resources in Worcestershire. 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.

New House Farm Quarry (brick clay), near Hartlebury

5.68 It is possible that other geological groups or formations in the county may have the potential to provide brick clay resources with particular forming or firing properties, or for a particular blend of clays to achieve the colours or other aesthetic qualities required. Whilst it is recognised that information about the quality and properties of the resources within the Mercia Mudstone Group is limited, the areas of search are extensive and have the potential to provide the necessary resources for the supply of a range of products. Proposals for brick clay development on windfall sites either within or outside the corridors will therefore only be supported where they meet the tests set out in policy MLP 3 or policy MLP 4.

Policy MLP 19: Delivering a 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

5.69 Policy MLP 19 requires an appropriate level of technical assessment to be submitted with each application for brick clay development. 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.

Stocks of permitted reserves

5.70 A stock of permitted reserves of at least 25 years may be required at an individual site in order to support investment in developing, maintaining or improving new or existing plant and equipment. Site-specific circumstances and/or other policies in the development plan (including other policies in the Minerals Local Plan) may limit the total amount which can be extracted without causing unacceptable harm, whilst ensuring delivery of high-quality restoration and after-use is possible.

5.71 The technical assessment should clearly set out the types of resources proposed to be worked and how the proposed development is linked to the capital investment required. A low stock of permitted reserves may be an indicator of urgent need, although each application will be considered on its own merits.

New House Farm Quarry (brick clay), near Hartlebury

Enabling appropriate blends to be made

5.72 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.

5.73 The technical assessment should clearly set out the types of resources proposed to be worked and whether the proposed development will enable the provision of different types of clay with the necessary properties and qualities to allow appropriate blends to be made to meet such specifications. This may include working clay resources in Worcestershire to supply brick works either within or outside the county.

Contributing to productive capacity

5.74 In addition to maintaining stocks of permitted reserves, the Mineral Planning Authority needs to ensure sufficient productive capacity is maintained in the county.

5.75 Worcestershire's overall productive capacity results from the number of active sites and their combined capacity to extract, process and sell minerals. The technical assessment required by policy MLP 19 should clearly set out the types of resources proposed to be worked, and indicate the range of materials and products which it is anticipated will be produced.

5.76 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.

5.77 Worcestershire's productive capacity for brick clay and clay products, is therefore likely to be maintained or enhanced through a combination of additional sites on mineral allocations and more efficient plant, machinery and working practices at existing sites. This is facilitated by the allocation of 13 areas of search for brick clay (Mercia Mudstone Group)[437] concentrated within the Salwarpe Tributaries, Lower Severn and Avon and Carrant Brook Strategic Corridors, with less extensive areas of search for brick clay in the North East Worcestershire Strategic Corridor.

5.78 Policy MLP 19 requires proposals to demonstrate the contribution they will make to maintaining or enhancing Worcestershire's productive capacity. The assessment should include the anticipated throughput and lifespan of a new site or extended working, the anticipated impact of new plant or amending planning conditions at existing sites, or the market or end use for which the mineral is needed.

5.79 Even where there is considered to be sufficient productive capacity for brick clay supply overall, proposals which contribute to maintaining or enhancing productive capacity will be supported, as they will help to ensure the resilience of the minerals supply chain in Worcestershire.

5.80 Where a site would contribute to productive capacity for particular colours, finishes or technical specifications, this should be set out in the technical assessment and will be given weight in decision-making.

437 13 areas of search are allocated for brick clay within the strategic corridors, representing 19.5% (by area) of the screened Mercia Mudstone Group resources in Worcestershire.

Silica sand

Policy MLP 20: Scale of Silica Sand Provision

Contributing to:

Objectives MO1, MO5

A stock of permitted reserves will be maintained to support new or existing plant, and productive capacity will be maintained to enable the supply of silica sand.

a) To indicate the scale of provision required for silica sand over the life of the plan:

i. The known baseline of sales of silica sand from Worcestershire in 2013 was 0.002 million tonnes.

ii. To achieve this level of production over the life of the plan (2018-2036) would require a total of 0.038 million tonnes of silica sand.

iii. The baseline stock of permitted reserves is unknown.

b) To achieve this scale of provision, silica sand is likely to be delivered from a combination of extant sites and new developments (including extensions to extant sites) either as stand-alone operations or alongside solid sands for aggregate use:

i. Permitted reserves at extant sites will contribute towards supply.

ii. New sites and alterations or extensions to extant sites will contribute to the security of productive capacity and/or support investment in or maintenance of new or existing plant and equipment:

» Proposals for supply from silica sand allocations will be supported in the North East Worcestershire and North West Worcestershire Strategic Corridors (see policies MLP 2 and MLP 3).

» As the identification of the strategic corridors was informed by the distribution of silica sand resources, and they contain extensive areas of search for silica sand, proposals for silica sand development on windfall sites either within or outside the strategic corridors will only be supported where they meet the tests set out in policies MLP 3 or MLP 4.

Reasoned justification

Scale of provision

5.81 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, or foundry sand). However, the Minerals Local Plan seeks to ensure that a steady and adequate supply of silica sand can continue to be supplied from resources within Worcestershire. In order to ensure that a stock of permitted reserves will be maintained to support new or existing plant, and sufficient productive capacity will be maintained for the supply of silica sand, the scale of provision required must be understood.

5.82 Sales of silica sand from Worcestershire were 2,000 tonnes in 2013.[438] Sales of silica sand from the county account for less than 1% of national supply of foundry sand,[439] 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.

438 This is the most recent data available in *Mineral extraction in Great Britain, Business Monitor PA1007* reports. Data for Worcestershire alone was only published for 2013. Data for Herefordshire and Worcestershire combined showed sales of 3,000 tonnes in both 2010 and 2011. 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.

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

5.83 Demand for silica sand for foundry uses has significantly decreased from historic levels due to the increased use of high-silica, clay-free (washed) and synthetic sands as foundry sands which can more easily be controlled to meet precise specifications. However, the small amount of silica sand produced in Worcestershire supplies multiple small foundries around the UK.[440] There is no indication that these levels of demand are likely to either increase or decrease significantly, however the baseline figures do not impose a cap on the amount of mineral development which can take place in Worcestershire.

Provision from extant sites

5.84 At the end of 2017 there was only one "active" site[441] in the county which works silica sand as an ancillary activity to the working of aggregate sand, and there is no publicly available information about the scale of the permitted silica sand reserves at this site. This site does not have industrial plant directly associated with it and instead supplies small individual foundries and other users and there is no indication that the operator of the current site wishes to invest in industrial plant to use silica sand.[442]

5.85 With only one active site, Worcestershire's productive capacity for silica sand could be put at risk by commercial decisions or natural events at that single site. This means that there may be a need for additional sites to ensure the security of productive capacity in the county, and further permitted reserves may be required to support any proposed investment in or maintenance of new or existing plant and equipment.

Provision from new sites and alterations and extensions to extant sites

5.86 New sites, and alterations and extensions to existing sites may be necessary to ensure a steady and adequate supply of silica sand over the life of the plan.

5.87 Policy MLP 5 provides support to enable any necessary alterations to the development permitted at extant sites, subject to other parts of the Development Plan being satisfactorily addressed. Whilst some alterations to planning permissions for extant sites will not result in significant changes, some alterations may enable more efficient working or processing of minerals to support productive capacity, or may increase the amount of silica sand reserve permitted for extraction at a particular site.

5.88 Specific sites and/or preferred areas that contain silica sand may be allocated, as a small number of sites have been put forward for consideration which have the potential to contain silica sand alongside solid sand resources. Silica sand development on new sites, and extensions to existing sites (i.e. development beyond a site's existing red line boundary) within the strategic corridors is also facilitated by the allocation of 41 areas of search as shown on Figure 4.1 (Key diagram) and defined on the Policies Map.[443] The areas of search for silica sand are located within the North East Worcestershire and North West Worcestershire Strategic Corridors.

5.89 Development proposals for silica sand over the life of the plan are therefore expected to be on mineral allocations, and proposals for silica sand development on windfall sites either within or outside the strategic corridors will only be supported where they meet the tests set out in policy MLP 3 or policy MLP 4.

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

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

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

443 41 areas of search are allocated for silica sand within the strategic corridors, representing 86.6% (by area) of the screened Wildmoor Sandstone Formation resources in Worcestershire. 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.

Policy MLP 21: Delivering a 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 the 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

5.90 Policy MLP 21 requires an appropriate level of technical assessment to be submitted with each application for silica sand development. 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 where silica sand working is ancillary to aggregate extraction, the anticipated throughput and lifespan of a new site, extended working, or new plant, and/or the anticipated impact of amending planning conditions at existing sites.

Stocks of permitted reserves

5.91 A stock of permitted reserves of at least 10 years may be required at an individual site in order to support investment in developing, maintaining or improving new or existing plant and equipment. Site-specific circumstances and/or other policies in the development plan (including other policies in the Minerals Local Plan) may limit the total amount which can be extracted without causing unacceptable harm, whilst ensuring delivery of high-quality restoration and after-use is possible.

5.92 The technical assessment should clearly set out how the proposed development is linked to the capital investment required. A low stock of permitted reserves may be an indicator of urgent need, although each application will be considered on its own merits.

Contributing to productive capacity

5.93 In addition to maintaining stocks of permitted reserves, the Mineral Planning Authority needs to ensure sufficient productive capacity is maintained.

5.94 Worcestershire's overall productive capacity results from the number of active sites and their combined capacity to extract, process and sell minerals. The technical assessment required by policy MLP 21 should clearly set out the quality of the sand and the uses for which the material is suitable. It should set out the relationship between the silica sand resources and any solid sand resources and, where silica sand working will be ancillary to working of solid sands, outline how this will be managed so that any silica sand encountered alongside aggregate sand and gravel will be available for industrial purposes.

Stanley Evans sandpit which contained silica sand resources

5.95 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.

5.96 Worcestershire's productive capacity for silica sand is therefore likely to be maintained or enhanced through a combination of additional sites on mineral allocations and more efficient plant, machinery and working practices at existing sites. This is facilitated by the allocation of 41 areas of search for silica sand[444] located within the North East Worcestershire and North West Worcestershire Strategic Corridors.

5.97 Policy MLP 21 requires proposals to demonstrate the contribution they will make to maintaining or enhancing Worcestershire's productive capacity. The assessment should include the anticipated throughput and lifespan of a new site or extended working, the anticipated impact of new plant or amending planning conditions at existing sites, and/or the market or end use for which the mineral is needed.

5.98 Even where there is considered to be sufficient productive capacity for silica sand supply overall, proposals which contribute to maintaining or enhancing that productive capacity will be supported, as they will help to ensure the resilience of the minerals supply chain in Worcestershire.

444 41 areas of search are allocated for silica sand within the strategic corridors, representing 86.6% (by area) of the screened Wildmoor Sandstone Formation resources in Worcestershire.

Building stone[445]

Policy MLP 22: Scale of Building Stone Provision

Contributing to:

Objectives MO1, MO3, MO5

The Minerals Local Plan seeks to secure an adequate and diverse supply of building stone from indigenous resources.

a) There is no information available to indicate the scale of provision required for building stone over the life of the plan, but demand for building stone resources may arise from conservation projects and/or new development.

b) An adequate and diverse supply of building stone will be delivered from new developments:

i. Proposals for building stone development will be supported on areas of search within the North East Worcestershire, North West Worcestershire and Salwarpe Tributaries Strategic Corridors (see policy MLP 3).

ii. As the presence and distribution of building stone has not been instrumental to the definition of the strategic corridors, and the areas of search they contain for building stone are not extensive, proposals for building stone development on windfall sites either within or outside the strategic corridors will be supported where they meet the tests set out in policies MLP 3 or MLP 4.

Reasoned justification

Scale of provision

5.99 Worcestershire does not play a significant role in the supply of building stone and, at the end of 2017, there were no active building stone sites in Worcestershire. 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[446]. This means that there is likely to be a need for building stone development over the life of the plan, but it is not possible to quantify this.

Provision from new sites

5.100 New sites will be crucial to delivering an adequate and diverse supply of building stone from indigenous resources over the life of the plan.

5.101 The allocation of specific sites and/or preferred areas for building stone is unlikely as no sites have been put forward for consideration. However, mineral development on new sites within the strategic corridors is facilitated by the allocation of 17 areas of search[447] as shown on Figure 4.1 (Key diagram) and defined on the Policies Map and supported by policy MLP 3. These areas of search for building stone are located within the North East Worcestershire, North West Worcestershire and Salwarpe Tributaries Strategic Corridors. It is also acknowledged that variations in the specific appearance and characteristics of building stones may prevent those stones within mineral allocations being suitable for a particular project. Proposals for building stone development on windfall sites either within or outside the strategic corridors will therefore be supported where they meet the tests set out in policy MLP 3 or policy MLP 4. This might also include proposals to produce building stone alongside other types of mineral such as crushed rock aggregate.

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

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

447 17 areas of search are allocated for building stone within the strategic corridors, representing the screened former building stone quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone*, http://www.buildingstones.org.uk/.

Policy MLP 23: Delivering an 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

5.102 Policy MLP 23 requires an appropriate level of technical assessment to be submitted with each application for building stone development. 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. This may include details of boreholes and trial pits, highlighting the depth, type and distribution of the resource, and/or 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 and/or enhancing productive capacity.

Stocks of permitted reserves

5.103 A stock of permitted reserves of building stone would help to meet any demand for both the repair of heritage assets and for new development projects. 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.

5.104 The technical assessment should clearly set out the types and amount of stone proposed to be worked. A low stock of permitted reserves for a particular type of building stone may be an indicator of urgent need, although each application will be considered on its own merits.

Contributing to productive capacity

5.105 In addition to maintaining stocks of permitted reserves, the Mineral Planning Authority needs to ensure sufficient productive capacity can be maintained.

5.106 Worcestershire's overall productive capacity results from the number of active sites and their combined capacity to extract, process and sell minerals. However, 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.

5.107 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. Building stone quarries can be relatively small-scale and have a lower rate of extraction compared to other types of mineral working, and often continue in operation for a long period. They may be worked intermittently but intensively (campaign working), involving stockpiling of stone ready for sale. It should be noted that this intermittent demand may lead to stocks of permitted reserves remaining dormant for some time.

5.108 The technical assessment required by policy MLP 23 should clearly set out the types of stone proposed to be worked and should include the anticipated throughput and lifespan of the site.

Stockpiled Malvern Stone ready for re-use

5.109 Worcestershire's productive capacity for building stone will be maintained or enhanced through new development on mineral allocations and/or development on windfall sites within or outside the strategic corridors. This is facilitated by the allocation of 17 areas of search[448] within the North East Worcestershire, North West Worcestershire and Salwarpe Tributaries Strategic Corridors and support for building stone development on windfall sites either within or outside the strategic corridors where they meet the tests set out in policy MLP 3 or policy MLP 4.

5.110 Even where there is considered to be sufficient productive capacity for building stone supply overall, proposals which contribute to maintaining or enhancing productive capacity for different types of building stone will be supported, as they will help to ensure the resilience of the minerals supply chain in Worcestershire.

5.111 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 13 or the Waste Core Strategy.

448 17 areas of search are allocated for building stone within the strategic corridors, representing the screened former building stone quarries identified through the Herefordshire and Worcestershire Earth Heritage Trust's project *A Thousand Years of Building with Stone*, http://www.buildingstones.org.uk/.

Other locally and nationally important industrial minerals

Policy MLP 24: 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 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

5.112 Other mineral deposits exist within Worcestershire, such as Halite (salt) and brine, and it is possible that over the plan period, applications may come forward to work other types of industrial mineral deposits which were either not known to exist at the time the plan was developed, or for which there was not sufficient evidence that they should be considered to be a mineral resource of national or local importance. Policy MLP 24 enables the supply of industrial minerals to take place.

5.113 At the end of 2017, there was one extant site for the small-scale extraction of brine in Worcestershire, located in the centre of Droitwich, and no sites with permitted reserves for any other locally or nationally important industrial minerals.

5.114 The allocation of specific sites and/or preferred areas for other industrial minerals is not anticipated as no sites have been put forward for consideration, and no areas of search have been allocated. Other than the potential for proposals to amend the existing brine working, any development proposals for other locally and nationally important industrial minerals over the life of the plan will therefore be supported on windfall sites either within or outside the strategic corridors where they meet the tests set out in policies MLP 3 and MLP 4.

5.115 Policy MLP 24 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, undertaken by an appropriate and competent expert, 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.

Preserved historic brine pumping station, Droitwich

Energy minerals supply

Policy MLP 25: 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 is either:

   i. environmentally acceptable; or

   ii. 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. A level of technical assessment appropriate to the proposed development will be required to clearly distinguish between exploration, appraisal and production phases.

Reasoned justification

5.116 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, and there are no areas of search allocated for energy minerals within the strategic corridors.

5.117 Although coal deposits exist in Worcestershire, there has been no working of coal in Worcestershire since the 1970s and, at the end of 2017, there were no sites with permitted reserves of coal in Worcestershire. The coal deposits in the county are not considered by the Coal Authority to be a commercially viable resource.[449] Any development proposals for coal over the life of the plan will therefore be on windfall sites either within or outside the strategic corridors, subject to the tests set out in policies MLP 3 and MLP 4. National policy is 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.[450]

5.118 There are no known oil or gas resources in Worcestershire and no blocks were licensed in or near to Worcestershire under the government's 14th Onshore Oil and Gas Licensing Round.[451] Should onshore oil and gas resources be discovered in the county, they would need to be licensed by government under future Onshore Oil and Gas Licensing Rounds before they could be proposed for development and may be acceptable either within or outside the strategic corridors, subject to the tests set out in policies MLP 3 and MLP 4.

5.119 Policy MLP 25 does not seek to enable coal extraction, and oil and gas development is considered unlikely due to the absence of licensed resources in the county. However, should any planning applications be put forward, they will be expected to contain a sufficient level of detailed information, prepared by an appropriate and competent expert, 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.

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

450 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 217.

451 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)

5.120 Proposals for coal 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.

5.121 Proposals for oil and gas should distinguish between exploration, appraisal and production phases when setting out the processes proposed and their likely effects.

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 26 to MLP 40 will need to be considered in developing proposals and should influence the design, layout, working methods and restoration proposals for the site. They will be considered by decision makers alongside other parts of the Development Plan (including other policies within the Minerals Local Plan) to ensure that proposals will contribute to the achievement of sustainable development.

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.

Efficient use of resources

Policy MLP 26: Efficient 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 efficient 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 a stable and 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. Mineral development needs to be designed, worked and restored in a way that ensures minerals are extracted efficiently whilst ensuring that safe, high-quality restoration and after-use is achieved. The working, processing and transportation of minerals can also be energy- and water-intensive. Reducing resource use and optimising on-site energy generation can play an important role in mitigating climate change impacts.

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 stockpiles[452] 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

452 Keeping stockpiles drier or allowing natural drying of wet minerals can significantly reduce energy demands for processing and transport.

machinery, motors and drives.[453] The use of low-emission vehicles[454] 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 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 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 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 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 safe, high-quality working, restoration and after-use.

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.[455] High-quality restoration should take place at the earliest opportunity, and appropriate aftercare should be put in place[456]. 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 that may arise from the development itself and/or from 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.

453 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.

454 Including non-fossil fuels and electric vehicles.

455 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals*, paragraph: 039 Reference ID: 27-039-20140306 Revision date: 06 03 2014.

456 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 210(h).

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 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.

Conveyor at Clifton Quarry

6.17 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.

6.18 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 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,[457] Authority Monitoring Report[458] 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.

457 Worcestershire's *Local Aggregate Assessments* are published alongside the *Authority Monitoring Report* at www.worcestershire.gov.uk/amr.

458 Worcestershire's *Authority Monitoring Reports* are available at www.worcestershire.gov.uk/amr.

- 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.
- 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 in the surrounding area, 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.
- Carry out an investigative assessment where minerals that are prone to the movement outlined in paragraph 6.17 are proposed to be extracted. This should demonstrate that the proposed methods for working the site would not result in risk of subsidence within the site or in the surrounding area, both during and after the lifetime of the development.
- 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.

6.19 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.

Landscaping as part of site restoration at Ball Mill Quarry, Grimley

Policy MLP 27: Green Belt

Contributing to:

Objective MO3

a) Mineral extraction and/or engineering operations within the Green Belt will be supported where a level of technical assessment appropriate to the proposed development demonstrates that, throughout its lifetime, the mineral extraction and/or engineering operations will:

- » preserve the openness of the Green Belt; and
- » not conflict with the purposes of including land within the Green Belt.

b) Where any aspect of the proposed development is inappropriate* in the Green Belt - including mineral extraction and/or engineering operations that cannot satisfy the tests in part (a) above - it will only be supported where a level of technical assessment demonstrates that very special circumstances exist that mean 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.

* Green Belt policy on inappropriate development, and development that may not be inappropriate, is set out in Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraphs 147-151.

Reasoned justification

6.20 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.[459]

6.21 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.[460] It is therefore likely that minerals development proposals within the Green Belt will come forward during the life of the Minerals Local Plan. Inappropriate development is, by definition, harmful to the Green Belt and should not be approved except in very special circumstances. Mineral extraction and engineering operations are two forms of development that are not inappropriate in the Green Belt, provided that they preserve the Green Belt's openness and do not conflict with the purposes[461] of including land within the Green Belt. However, where mineral extraction and engineering operations do not preserve the openness of the Green Belt or conflict with its purposes, they will be inappropriate. Other aspects of mineral development may also be inappropriate. Where this is the case, very special circumstances will need to be demonstrated for such mineral development to be considered acceptable.

459 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 137.

460 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.

461 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 138 states that Green Belt serves five purposes:
a) to check the unrestricted sprawl of large built-up areas;
b) to prevent neighbouring towns merging into one another;
c) to assist in safeguarding the countryside from encroachment;
d) to preserve the setting and special character of historic towns; and
e) to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

Processing solid sand at Wildmoor Quarry, near Bromsgrove

6.22 Policy MLP 27 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.

6.23 Very special circumstances will need to be considered on a case-by-case basis and will depend on the circumstances of any proposed development.

6.24 Where the proposed development requires the impact of Green Belt openness to be assessed, the judgement will be based on the circumstances of the case. A range of matters may need to be taken into account by the Mineral Planning Authority when assessing the impact on openness, including spatial and visual aspects, the duration of the development and its remediability, and the degree of activity likely to be generated.[462] As minerals development is a temporary use of land, this may be relevant to the impact on openness.

6.25 National policy[463] 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.

462 Planning Practice Guidance states that "Assessing the impact of a proposal on the openness of the Green Belt, where it is relevant to do so, requires a judgment based on the circumstances of the case. By way of example, the courts have identified a number of matters which may need to be taken into account in making this assessment. These include, but are not limited to:
• openness is capable of having both spatial and visual aspects – in other words, the visual impact of the proposal may be relevant, as could its volume;
• the duration of the development, and its remediability – taking into account any provisions to return land to its original state or to an equivalent (or improved) state of openness; and
• the degree of activity likely to be generated, such as traffic generation." Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Green Belt*, paragraph: 001 Reference ID: 64-001-20190722 Revision date: 22 07 2019.

463 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 145 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 28: 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 or health and well-being.

A level of technical assessment appropriate to the proposed development will be required to demonstrate that, throughout its lifetime and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, the proposed development will not cause unacceptable harm to sensitive receptors from:

a) dust;
b) odour;
c) noise and vibration;
d) light;
e) visual impacts; and/or
f) contamination.

Reasoned justification

6.26 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 development[464] and policy MLP 28 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 amenity or health and well-being. The method, phasing and lifespan of mineral workings, their distance to sensitive receptors, and their relationship to their locality will influence the nature and likelihood of such impacts.

6.27 Policy MLP 28 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. 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 28, the assessment(s) should:

- identify the sensitive receptor(s)[465] which may be affected by the proposed development;
- 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 from the development itself and/or from other existing or approved development;

464 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 130(f).
465 Sensitive receptors are defined in the glossary.

- 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.

6.28 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,[466] a Health Impact Assessment (HIA)[467] 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.

6.29 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.

6.30 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 7 to MLP 12). 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.

Dust

6.31 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.

6.32 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

6.33 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.

466 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.

467 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.

Wheel washing facility at Clifton Quarry

Noise and vibration

6.34 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.[468] [469]

6.35 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.

6.36 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.

6.37 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 receptors, including properties. 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.[470]

6.38 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.[471]

468 Defra (2010) *Noise Policy Statement for England.*

469 Tranquil areas which have remained relatively undisturbed by noise, and are prized for their recreational and amenity value for this reason, may be identified and protected. At the time the Minerals Local Plan was submitted to the Secretary of State, there were no designated tranquil areas within Worcestershire but it is possible that such areas may be identified for protection during the life of the plan.

470 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).

471 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Minerals* (Revision date: 17 10 2014).

6.39 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.[472]

Light

6.40 Insensitive use of lighting that causes glare, unnecessary light spillage beyond site boundaries and sky glow can annoy people, undermine enjoyment of the countryside, and detract from appreciation of the night sky.[473]

6.41 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.

6.42 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 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 impacts

6.43 In planning law, no individual has the right to a particular view. However, in some cases, a change to the local or wider landscape may have the potential to materially harm visual amenity. The visual impact of mineral development 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 degree to which any working faces, plant and haul routes or conveyors are visible or intrusive in the landscape.

6.44 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. The assessment should consider working proposals, the degree of visual exposure, screening, and proposed after uses. 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.[474]

6.45 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.

472 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.

473 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Light Pollution* (Revision date: 06 03 2014).

474 Landscape Institute (2013) *Guidelines for Landscape and Visual Impact Assessment* (Third edition).

Safety warning at a working sand and gravel site

Contamination

6.46 There is potential for minerals development to involve the storage and use of fuels, explosives and other hazardous substances[475]. 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.

6.47 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 sensitive receptors that could be affected. 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.

6.48 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.[476]

475 As defined by *The Planning (Hazardous Substances) Regulations 2015*.

476 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Hazardous substances* (Revision date: 28 07 2017).

Policy MLP 29: Air Quality

Contributing to:

Objectives MO2, MO3, 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 air quality, and will help secure net improvements in overall air quality where possible.

A level of technical assessment appropriate to the proposed development will be required to demonstrate that, throughout its lifetime, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, the proposed development will:

a) not cause unacceptable harm to sensitive receptors, sensitive habitats, or designated sites of importance for biodiversity from air quality. 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; and

b) deliver improved air quality even when legally binding limits for concentrations of major air pollutants are not being breached, unless it is clearly demonstrated that this is not possible.

Reasoned Justification

6.49 Increases in air pollutants can have harmful effects on human health and the environment. Mineral sites can cause concern to local communities because of possible impacts on air quality. 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.

6.50 Policy MLP 29 seeks to ensure that minerals developments are planned, managed and restored in a way that protects people and other sensitive receptors[477], sensitive habitats,[478] and designated sites of importance for biodiversity[479] from unacceptable effects on air quality. 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.

6.51 Policy MLP 29 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. Assessments should:

- Establish the baseline local air quality, including the identification of any locations where air quality is or is likely to be a concern.
- Identify likely changes to air quality throughout the life of the development, including any changes in vehicle-related emissions resulting from the development, and any new point sources of air pollution during all phases of 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.

477 Sensitive receptors are defined in the glossary.

478 Sensitive habitats are those habitats that are sensitive to changes in air quality. There is no definitive list or map of such habitats, as they must be identified on a case-by-case basis at the time of the planning application, taking account of non-designated habitats as well as those on any designated sites. Evidence used in the assessment required under policy MLP 31 (Biodiversity) should also help to identify such habitats for the purposes of policy MLP 29, and relevant guidance should be followed such as Institute of Air Quality Management (2019) *A guide to the assessment of air quality impacts on designated nature conservation sites* and Chartered Institute of Ecology and Environmental Management (2021) *Advice on Ecological Assessment of Air Quality Impacts*.

479 Designated sites of importance for biodiversity are those sites of international, national, or local importance, as defined in the glossary under the headings of Natura 2000 sites, Special Areas of Conservation, Ancient Woodland, Aged or veteran trees, Sites of Special Scientific Interest, and Local Wildlife Sites.

- Identify the sensitive receptors, sensitive habitats, and designated sites of importance for biodiversity[480] that may be affected by the proposed development. 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. Where relevant, reference should be made to the Worcestershire Air Quality Action Plan[481] and corresponding action plans of surrounding areas.
- Assess the likely air quality impacts and their significance, including the potential for cumulative impacts from the development itself and/or from other existing or approved development, and clearly state the methods adopted to reach these conclusions.
- Where negative effects are identified, set out acceptable mitigation measures to remove these effects or reduce them to acceptable levels.
- Set out measures to deliver improved air quality where possible, and quantify the contribution these measures will make to securing net improvements in overall air quality. This must be considered even when legally binding limits for concentrations of major air pollutants are not being breached. Measures to deliver improved air quality may include multifunctional green infrastructure measures. Where applicants consider that air quality improvements cannot be delivered as part of the proposed development, the reasons for this should be clearly demonstrated.

6.52 The assessment 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. In some cases, air quality impacts may be addressed through an Environmental Impact Assessment. Where there are expected to be significant health impacts,[482] a Health Impact Assessment (HIA)[483] 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.

6.53 Some potential air quality impacts may be able to be mitigated through appropriate site design and layout and the use of the surrounding topography. Air quality mitigation measures should be influenced by the local context, and should be incorporated in a way which responds to the relevant strategic corridor priorities (see MLP 8 to MLP 12). 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, or limiting working hours.

6.54 Opportunities to secure overall improvements in air quality may be realised through measures such as traffic and travel management and green infrastructure provision and enhancement. Green infrastructure measures that complement the existing features of the natural environment can also deliver wider multifunctional benefits.

480 The requirements of Policy MLP 31 (Biodiversity) will be relevant to considering particular impacts on sensitive habitats and designated biodiversity sites.

481 Worcestershire's *Air Quality Action Plan*, together with information about Air Quality Management Areas in Worcestershire, can be found at www.worcsregservices.gov.uk/pollution/air-quality.aspx.

482 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.

483 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.

Policy MLP 30: 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, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, 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 or navigable waterways; 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

6.55 Access and recreation plays a key role in the continued social, environmental and economic well-being of the county.[484] Rights of way, navigable waterways 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.

6.56 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.[485]

Enhancement of the rights of way network and provision of publicly accessible green space

6.57 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.

484 In the 2009 *Worcestershire Viewpoint* survey, 97% of residents classed parks and open spaces as either "important" or "very important".
485 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 100.

6.58 To demonstrate how opportunities to enhance the rights of way network and provision of publicly accessible greenspace will be optimised, policy MLP 30 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 8 to MLP 12) 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.

6.59 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.

Protecting publicly accessible green space

6.60 Policy MLP 30 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 or navigable waterways on or in proximity to the application site, and outline their role in local, county, and regional scale provision. The *Worcestershire Green Infrastructure Framework* documents[486] may provide a useful starting point.
- Identify the impact of the proposal on these green spaces or waterways 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.

6.61 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 or recreational use of navigable waterways, compensatory provision may be necessary. Clear justification should be included to demonstrate why the benefits of the proposed development outweigh the impacts.

486 http://www.worcestershire.gov.uk/gi.

Croft Farm Water Park, Bredons Hardwick (former sand and gravel working)

Protecting existing rights of way

6.62 Policy MLP 30 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*.[487] 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.

6.63 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.

6.64 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.

6.65 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.

6.66 Diverting or closing a right of way, whether on a temporary or permanent basis, follows a separate application process.

487 http://www.worcestershire.gov.uk/countryside.

Biodiversity

Policy MLP 31: Biodiversity

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will 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, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, the proposed development will:

a) conserve, restore and enhance priority habitats and ecological networks, provide for the protection and recovery of priority species, and deliver measurable net gains for biodiversity, integrating other green infrastructure components where appropriate;

b) minimise impacts on biodiversity and avoid, adequately mitigate, or (as a last resort) compensate for significant harm to biodiversity;

c) protect and enhance sites of biodiversity value in accordance with the hierarchy of designations:

   i. 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);

   ii. 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;

   iii. not be likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments), 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

   iv. not result in significant harm to either a Local Wildlife Site*, or to a priority habitat** unless the significant harm can be adequately mitigated or, as a last resort, compensated for.

* Local Wildlife Sites are non-statutory, locally designated sites notable for their value in representing the most important and most distinctive species and habitat features of substantive nature conservation value in the county. They can be viewed as 'point data' on the interactive minerals mapping tool available at **www.worcestershire.gov.uk/minerals**. Developers will need to liaise with the Worcestershire Biological Records Centre to access more detailed data, and there may be a charge for this data.

** Priority habitats are those recognised as being of principal importance under Section 41 of the Natural Environment and Rural Communities Act 2006, as well as those identified locally by the Worcestershire Biodiversity Partnership. Known priority habitats in the county can be viewed on the Worcestershire Habitat Inventory available at **www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory**.

Reasoned justification

6.67 Minerals operations usually take place on greenfield land and result in physical change to the site's biodiversity.[488] 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.

6.68 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.[489]

6.69 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.

6.70 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

6.71 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 31 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.[490] This is especially important in adapting to climate change, as species need the ability to move to the climate most suitable to them. Isolated green spaces will limit this movement, making it more difficult for species to adapt to change.[491]

6.72 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 2020[492] and best practice guidance[493], taking into account any principal protected species[494], local Biodiversity Action Plan targets, biological and chemical water quality,[495] the Worcestershire Habitat Inventory[496], and *Biodiversity and minerals sites in Worcestershire: Guidance for the sustainable management of biodiversity action plan habitats at Worcestershire*

488 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.

489 *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.

490 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.

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

492 Defra (August 2011) *Biodiversity 2020: A strategy for England's wildlife and ecosystem services.*

493 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.

494 As specified in lists prepared under Section 41 of the *Natural Environment and Rural Communities Act 2006.*

495 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.

496 Available at http://www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory.

mineral sites[497]. 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.

6.73 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 8 to MLP 12).

Protecting biodiversity

6.74 Policy MLP 31 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.

6.75 In the case of a European designation[498], 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. Supporting habitat in areas beyond the boundary of a European designation which are connected with or 'functionally linked' to the life and reproduction of a population for which a site has been designated or classified should be taken into account in a Habitats Regulations Assessment, with consideration of how critical the area may be to the population of the qualifying species and whether the area is necessary to maintain or restore the favourable conservation status of the species.[499]

497 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.

498 Sites which would be included within the definition at regulation 8 of the *Conservation of Habitats and Species Regulations 2017*.

499 Chapman, C. & Tyldesley, D. (2016) *Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions.* Natural England Commissioned Reports, Number 207.

Swans at Ball Mill Quarry, Grimley

6.76 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.[500] 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 2000[501] is protected. Applicants will be expected to provide sufficient detail of the necessary compensation measures and how they will be delivered.

6.77 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,[502] 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.

6.78 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.

500 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 182.

501 The network of European-designated sites protected under the EU Habitats and Birds Directives, respectively.

502 Guidance on biodiversity offsetting can be found at https://www.gov.uk/government/collections/biodiversity-offsetting.

Policy MLP 32: Historic Environment

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will conserve and, where possible, enhance the historic environment.

A level of technical assessment appropriate to the proposed development and its potential impact on the historic environment and proportionate to the significance of any affected heritage asset(s) and their setting will be required to demonstrate that, throughout its lifetime, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, 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) avoid causing substantial harm to, or total loss of significance of, any designated heritage assets. Where there will be such harm or loss, the development will not be permitted unless it is demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or if a specific set of circumstances are all satisfied*. Substantial harm to or loss of grade II listed buildings, or grade II registered parks or gardens, should be exceptional. Substantial harm to or loss of assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional;

c) avoid causing less than substantial harm to the significance of any designated heritage assets. Where there will be such harm, it will be weighed against the public benefits of the development including, where appropriate, securing the optimum viable use of the heritage asset(s);

d) avoid causing unacceptable harm to, or unacceptable loss of significance of any non-designated** heritage assets. 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

e) 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.***

* These specific circumstances are set out in Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 201.

** 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, c or d of this policy.

Reasoned justification

6.79 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,[503] and great weight should be given to their conservation.[504]

6.80 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

6.81 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.

6.82 Policy MLP 32 requires proposals to conserve and, where possible, 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 8 to MLP 12) 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.[505]

6.83 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

6.84 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.

6.85 Policy MLP 32 requires an appropriate level of technical assessment to be submitted with each application.[506] Such assessments should be undertaken by an appropriate and competent

503 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.

504 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 199.

505 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.

506 For additional guidance see Worcestershire Archive and Archaeology Service (2012) *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.

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, including any contribution made by their setting[507] . As a minimum, the Worcestershire Historic Environment Record[508] and Worcestershire Historic Landscape Characterisation[509] 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.[510]
- 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.[511]
- 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.

6.86 Where the proposed development would lead to harm to or loss of significance of a designated heritage asset, 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.

6.87 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.[512] 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.[513]

507 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 194.

508 The Historic Environment Record is available through the Worcestershire Archive and Archaeology Service, http://www.worcestershire.gov.uk/waas.

509 Worcestershire County Council (2012) *Worcestershire Historic Landscape Characterisation* http://www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1062/historic_landscape_ characterisation_hlc.

510 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.

511 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.

512 Worcestershire Archive and Archaeology Service (2007) *Archaeology and aggregates in Worcestershire* http://public.worcestershire.gov.uk/sites/archaeology/Reports/wr10986.pdf.

513 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, footnote 68.

Mammoth tusk at Clifton sand and gravel working

Recording of heritage assets prior to loss

6.88 Where whole or partial loss of heritage assets is justified against part b, c or d of policy MLP 32,[514] 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.

6.89 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.

514 In accordance with the Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 205, the ability to record evidence of our past will not be a factor in deciding whether such loss should be permitted.

Policy MLP 33: Landscape

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will 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, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, 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 and enhancing 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

6.90 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.[515] This is supplemented by the Worcestershire Historic Landscape Characterisation[516] 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.

515 The *Worcestershire Landscape Character Assessment Supplementary Guidance* technical handbook and interactive maps are available at www.worcestershire.gov.uk/lca.

516 The *Worcestershire Historic Landscape Characterisation* is available at http://www.worcestershire.gov.uk/info/20230/archive_and_archaeology_projects/1062/historic_landscape_characterisation_hlc.

6.91 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.

Conserving and enhancing inherent landscape character

6.92 The scale of minerals development means that there are likely to be significant opportunities to take a landscape-scale approach to conserving and enhancing inherent landscape character through the working and restoration of sites.

6.93 Policy MLP 33 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.[517]
- 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 from the development itself and/or from 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.

6.94 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 waterbodies[518] are in keeping with the landscape character in terms of their design and scale, and planting using locally appropriate species.

517 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.

518 Waterbodies may be permanent or transitory and could include ponds, lakes, reservoirs, ditches, streams, or wetlands.

6.95 The technical assessment will be expected to be prepared in line with methods set out in the *Guidelines for Landscape and Visual Impact Assessment*[519] and to identify opportunities to contribute towards the relevant strategic corridor priorities (see Policies MLP 8 to MLP 12) and outline how these and any site-specific opportunities have influenced working and restoration proposals to optimise the enhancement of the inherent landscape character.

6.96 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 wholescale 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.

6.97 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 28, Amenity).

Protecting designated landscapes

6.98 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.[520] 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.[521]

6.99 Policy MLP 33 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 and 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.

Views from Bredon Hill, part of the Cotswolds AONB

519 Landscape Institute (2013) *Guidelines for Landscape and Visual Impact Assessment (Third edition).*

520 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 176.

521 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

Policy MLP 34: Soils

Contributing to:

Objectives MO2, MO3, MO5, MO6

Planning permission will be granted where it is demonstrated that the proposed mineral development will 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

6.100 Soils are an essential and finite physical resource.[522] They provide a growing medium for food, timber and other crops, store carbon and water, support biodiversity and act as a buffer against pollution.[523] Worcestershire's soils face increasing pressures from climate change, land management practices and development.[524]

6.101 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.

6.102 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.[525] 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.

522 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Natural Environment*, paragraph: 024 Reference ID: 8-024-20140306 Revision date: 06 03 2014.
523 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Natural Environment*, paragraph: 025 Reference ID: 8-025-20140306 Revision date: 06 03 2014.
524 Worcestershire County Council (2011) *Planning for soils technical research paper.*
525 Defra (2009) *Safeguarding our soils: A strategy for England*

Sand and gravel visible in the soil at Clifton Quarry (before mineral extraction)

6.103 Policy MLP 34 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 guidance[526], 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 replaced[527] in another part of the site, and used in restoration schemes.

6.104 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.

526 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/20090317221756/http://www.defra.gov.uk/farm/environment/land-use/soilguid/ index.htm.

527 Restoration of soils to their final location without a period of storage.

Policy MLP 35: 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

6.105 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 Classification[528] 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.[529]

6.106 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.[530]

Avoiding significant development of best and most versatile agricultural land

6.107 Policy MLP 35 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 point[531] but developers may also need to undertake more detailed assessments, particularly where existing information does not distinguish between grade 3a and grade 3b land.
- 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.

528 Natural England Technical Information Note TIN049 (2012) *Agricultural Land Classification: protecting the best and most versatile agricultural land.*
529 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, Annex 2: Glossary
530 Natural England Technical Information Note TIN049 (2012) *Agricultural Land Classification: protecting the best and most versatile agricultural land.*
531 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

- 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

6.108 It is not always necessary for high-quality land to be restored to agricultural use. The technical assessment required by policy MLP 35 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,[532] 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.

6.109 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.

6.110 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 8 to MLP 12). 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.

Restored sand and gravel working, Blackstone Quarry

532 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 36: Geodiversity

Contributing to:

Objectives MO2, MO3

Planning permission will be granted where it is demonstrated that the proposed mineral development will 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, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, 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 in accordance with the hierarchy of designations:

   i. development proposals likely to have an adverse effect on any Sites of Special Scientific Interest (either individually or in combination with other developments), should not normally 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 should not result in significant harm to a Local Geological Site* unless the significant harm can be adequately mitigated or, as a last resort, compensated for;

   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.

* Local Geological Sites are locally designated sites that have been identified by local geoconservation groups as being of local importance and then notified to local authority planning departments as sites in need of protection from future development. They can be viewed as 'point data' on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals. Developers will need to liaise with the Herefordshire & Worcestershire Earth Heritage Trust to access more detailed data, and there may be a charge for this data (**www.earthheritagetrust.org**).

Reasoned justification

6.111 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

6.112 Mineral sites offer opportunities to enhance scientific and cultural understanding of geodiversity by revealing, recording or retaining features of geological conservation interest.

6.113 Policy MLP 36 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 8 to MLP 12) 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.

6.114 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 Plan[533] and Worcestershire Geodiversity Action Plans[534]; 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.

6.115 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.

Conservation of important geological or geomorphological features

6.116 Policy MLP 36 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.

533 http://www.ukgap.org.uk/.

534 http://www.earthheritagetrust.org/pub/local-gaps/the-local-geodiversity-action-plans/

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

This should include details of measures that will be taken to avoid or otherwise reduce harm through appropriate mitigation, changes to on-site working, any enhancement proposals, or, as a last resort in the case of significant harm to a Local Geological Site, any compensation measures. Mitigation or compensation 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, clear justification should be included to demonstrate why the benefits of the proposed development clearly outweigh the impacts.

6.117 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

6.118 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.

6.119 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.

Water quality and quantity

Policy MLP 37: 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, where possible, 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, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, 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

6.120 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.

6.121 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.

6.122 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).

6.123 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.

Wet woodland

Enhancing water resources

6.124 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.[535]

6.125 Policy MLP 37 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 8 to MLP 12) 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.

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

Protecting water quality and quantity

6.126 Policy MLP 37 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 status[536] of any water features within the development site and its surroundings[537];
- 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.

6.127 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.[538] Applicants are encouraged to seek advice from the Environment Agency at an early stage in developing proposals.

6.128 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.[539]Drainage during site operations and any discharge to local watercourses must be controlled to comply with Environment Agency standards.

Wet grassland, Lower Moor

536 Including Water Framework Directive status if available, Nitrate Vulnerable Zones, Source Protection Zones, or any other measure of condition/risk, including restrictions on abstraction.

537 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/

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

539 Environment Agency (2007) *Hydrogeological impact appraisal for dewatering abstractions.*

Flooding

Policy MLP 38: 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, where possible, 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, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, 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

6.129 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.

6.130 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

6.131 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.[540] 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 catchment[541] [542].

6.132 Policy MLP 38 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 8 to MLP 12) 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

6.133 Policy MLP 38 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.[543] They should:

- establish current and future levels of flood risk from all sources[544], 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.[545] The technical assessment should satisfy the relevant sequential and exception tests if required.[546]

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

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

542 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/

543 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.

544 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.

545 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 167.

546 In accordance with Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraphs 159-169, and *Planning Practice Guidance, Flood risk and coastal change*.

River Severn flooded at Worcester, February 2014

6.134 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.

6.135 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.

6.136 Minerals working, restoration and after-use strategies should be informed by local and national evidence and policy.[547] 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.

547 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.

Policy MLP 39: 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, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, 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 access for employees and visitors which, where appropriate, 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.

* The strategic transport network comprises navigable waterways, strategic rail routes and the strategic highway network.

Reasoned justification

6.137 Policy MLP 39 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, within, or from the site. Transport of minerals, materials and people can contribute to climate change through greenhouse gas emissions, and 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.

6.138 The strategic transport network comprises navigable waterways, strategic rail routes and the strategic highway network[548] (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.

Addressing transport implications of mineral development

6.139 Policy MLP 39 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

548 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.

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 impacts[549] of the proposed routes, both on and off site, taking account of any cumulative effects from the development itself and/or 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, where appropriate, optimises access to and from the site by public transport, walking and cycling. This may involve different solutions during working phases compared to restoration and after-use of the site, and a Travel Plan which differentiates between stages of the development may be required to identify and manage the daily employee and visitor movements to and from the site. Where it is not practical to incorporate safe access for employees and visitors through the use of public transport, walking and cycling, this should be fully justified.
- 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.

6.140 All development that will generate significant transport movements should have a Travel Plan which is supported by a Transport Statement or Transport Assessment.[550] 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.

6.141 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.

6.142 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.

Loading sand and gravel onto a barge at Ryall's Court Farm Quarry

549 This should be considered in conjunction with policy MLP 28 (Amenity).

550 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 113.

Planning obligations

Policy MLP 40: 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 developmaent 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

6.143 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 into a planning obligation, the Mineral Planning Authority will seek to use planning conditions in the first instance.[551]

6.144 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.

6.145 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.

6.146 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.

551 Ministry of Housing, Communities and Local Government, *Planning Practice Guidance, Use of planning conditions*, paragraph: 011 Reference ID: 21a-011-20140306, Revision date: 06 03 2014

Stockpiles of recycled aggregates

6.147 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.

6.148 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 circumstances[552], 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.

552 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 211(e).

Borrow pit at Powick

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.[552]

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.

552 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 210(c-e) and Ministry of Housing, Communities and Local Government, *Planning Practice Guidance*, Minerals (Revision date: 17 10 2014).

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 are exempt from policies MLP 41 and MLP 42 and will not need to consider safeguarding requirements.

7.6 There are other cases where development may also be exempt from safeguarding requirements because impacts on safeguarded mineral resources are likely to be *de minimis*. However, this can only be determined on a case by case basis, based on the advice of the Minerals Planning Authority. These possible exemptions are set out in Table 7.2.

7.7 Local Planning Authorities will be expected to consult the Mineral Planning Authority on all other types of development.

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: 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 b) Sites allocated in Neighbourhood Development Plans[553], where: 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 a Neighbourhood 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. 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 42 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[554] and will be expected to provide any suitable mitigation to prevent significant adverse effects on the allocated land use.
c) Householder applications[555] d) Applications for non-material amendments e) Replacement of existing buildings with buildings of similar scale and within the same Use Class f) Alterations or extensions to existing buildings where this is within their existing curtilage g) Provision of driveways, garages, car parks, hard standings and non-habitable structures within the curtilage of existing buildings h) Proposals for work to trees or removal of hedgerows i) Applications for advertisement consent	These types of development are very unlikely to increase the risk of sterilising a mineral resource or supporting infrastructure.

553 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.

554 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 187.

555 Householder applications relate to applications for planning permission for [alterations] development for an existing dwellinghouse, or development within the curtilage of such a dwellinghouse for any purpose incidental to the enjoyment of the dwellinghouse. This does not include an application for change of use, or an application to change the number of dwellings in a building. As defined in The Town and Country Planning (Development Management Procedure) (England) Order 2010.

Type of Development	Reason for exemption
j) Applications for development below the threshold of "major development"[556] located **within adopted settlement boundaries**[557], where not within 250m of an existing minerals infrastructure site	Small-scale development within urban areas is unlikely to increase the risk of sterilising a mineral resource. However, larger developments may sterilise a significant area of minerals resource, or may enable use of mineral beneath large regeneration projects, and therefore will not be exempt. In addition, **any application within 250m of an existing minerals infrastructure asset will not be exempt,** as there is a high risk of impacting on the continued operation of existing businesses and facilities.
k) 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.
l) 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.
m) Prior notifications n) Certificates of Lawfulness of Existing Use or Development (CLEUD) o) Certificates of Lawfulness of Proposed Use or Development (CLOPUD)	These are a matter of legal fact and do not present an opportunity to comment on mineral safeguarding matters.

Sandy exposure in river terraces

556 As defined in *The Town and Country Planning (Development Management Procedure) (England) Order 2010.*

557 In some parts of the county, these boundaries may be referred to using different terminology, such as "development boundaries".

Table 7.2. Types of developments that are likely be exempt from mineral safeguarding requirements where impacts are considered to be de minimis.

Type of Development	Reason for exemption
a) Applications for development below the threshold to be considered as "major development" located outside of adopted settlement boundaries[558] where not within 250m of an existing minerals infrastructure site	Some types of small-scale development will increase the risk of sterilising a mineral resource and therefore they will not always be exempt, but other types may not increase the risk of sterilising a mineral resource. However, **applications within 250m of an existing minerals infrastructure asset will not be exempt**, as there is a high risk of impacting on the continued operation of existing businesses and facilities.
b) Applications for a change of use	Some types of change of use will increase the risk of sterilising a mineral resource or supporting infrastructure by introducing or increasing the number of sensitive receptors, or by altering how a site is used and therefore the sensitivity of the land use. However, some types of change of use will be unlikely to increase the risk of sterilising a mineral resource or supporting infrastructure.
c) Applications for reserved matters	Reserved matter applications may have an impact upon mineral resources and infrastructure, particularly where aspects of the development such as layout are reserved. Where mineral safeguarding has not been fully considered at outline stage or where mitigation measures are required to make the development acceptable in line with safeguarding policies, reserved matter applications will not be exempt.
d) Applications for temporary developments of up to 5 years	Temporary developments are capable of having a significant impact upon mineral resources and the operation of mineral sites or supporting infrastructure, and potential impacts must be considered. However, some types of temporary development will be unlikely to increase the risk of sterilising a mineral resource or supporting infrastructure. Developments which are temporary but for a period of more than 5 years will not be exempt.
e) Applications for material amendments	Material amendments to existing permitted development with no additional land take are unlikely to have a significant impact on mineral resources or infrastructure. However, it is necessary to understand the nature of the proposed change to determine whether or not the amendment could have significant implications for mineral safeguarding.

558 In some parts of the county, these boundaries may be referred to using different terminology, such as "development boundaries".

Policy MLP 41: Safeguarding Locally and Nationally Important Mineral Resources

Contributing to:

Objectives MO1, MO5, MO6

The locally and nationally important mineral resources within the Mineral Safeguarding Areas defined on the Policies Map* 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 Mineral Consultation Areas defined on the Policies Map*** 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 sterilisation would be avoided or minimised, 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 either in advance of development taking place or in phases alongside 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 either in advance of development taking place or in phases alongside 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 and putting in place sufficient mitigation measures to minimise the sterilisation of resources beyond the site boundary.

Where the Local Planning Authority, having consulted the Mineral Planning Authority, considers the extraction and/or mitigation measures proposed under part c are sufficient to address the potential for sterilisation of the mineral resource, the non-mineral development will be supported. Where the extraction and/or mitigation measures proposed are not considered sufficient, the potential for sterilisation of mineral resources will be weighed against the merits of the proposed non-mineral development and the proposed non-mineral development may be refused.

* 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**.

** Table 7.1 and Table 7.2 set out where applications are, or may be 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

7.8 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.[559]

7.9 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.[560]

7.10 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,[561]
- solid sand resources,[562]
- crushed rock resources,[563]
- silica sand resources,[564]
- an area of Mercia Mudstone Group brick clay close to the Hartlebury and Waresley brickworks,[565] and
- former building stone quarries.[566]

7.11 These locally and nationally important mineral resources have been designated as Mineral Safeguarding Areas on the Policies Map[567] and are shown in Figure 7.1. 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.

7.12 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.

559 Ministry of Housing, Communities and Local Government (July 2021) *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), coal derived fly ash in single use deposits, 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 resources occur in Worcestershire.

560 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.

561 Identified using digital data provided by the British Geological Survey (1:50,000 scale)

562 Identified using digital data provided by the British Geological Survey (1:50,000 scale).

563 Identified using digital data provided by the British Geological Survey (1:50,000 scale).

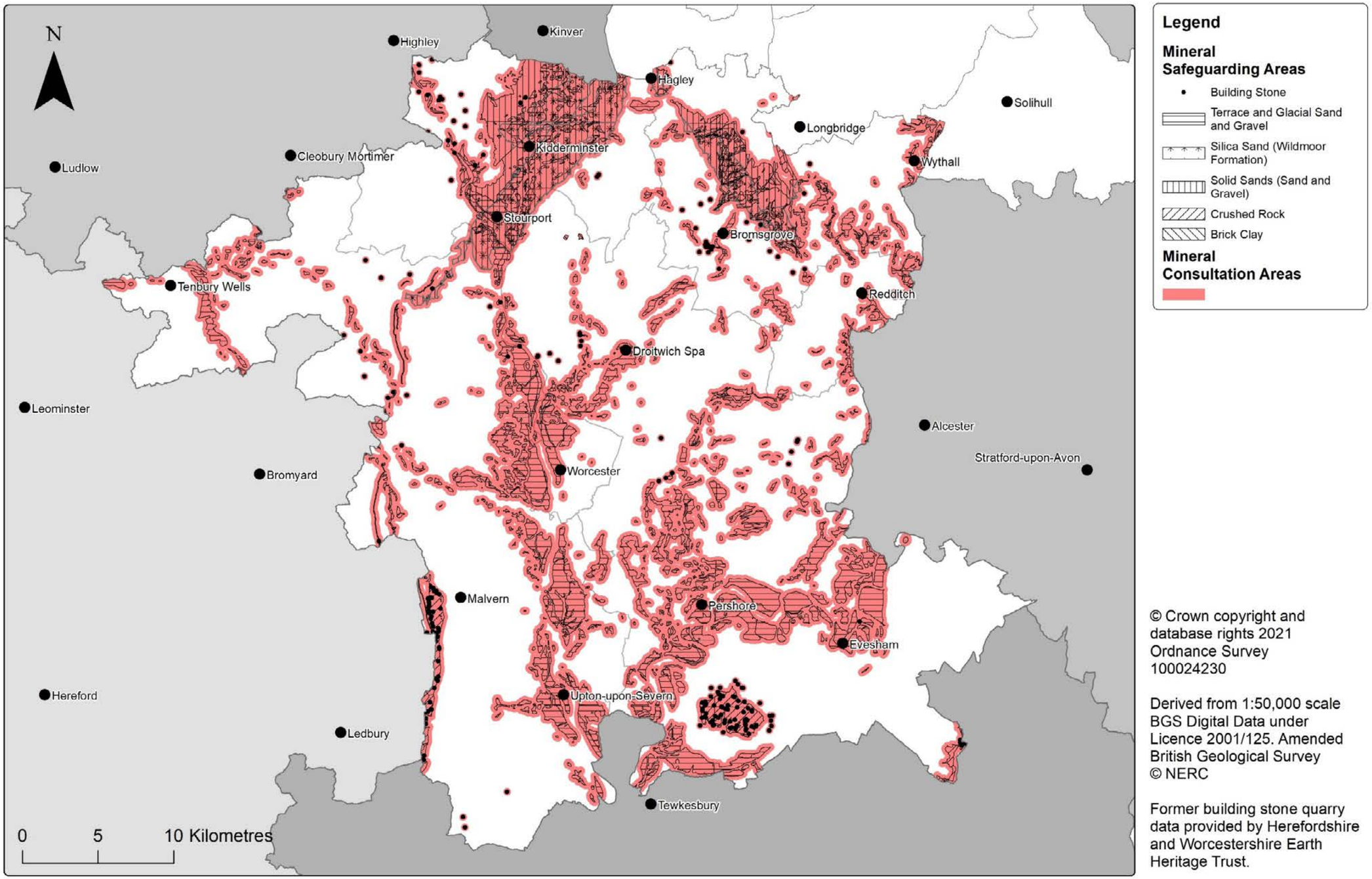
564 The Wildmoor Sandstone Formation deposits identified using digital data provided by the British Geological Survey (1:50,000 scale).

565 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.

566 The former quarries identified by Herefordshire and Worcestershire Earth Heritage Trust's project "*A Thousand Years of Building with Stone*", http://www.buildingstones.org.uk/

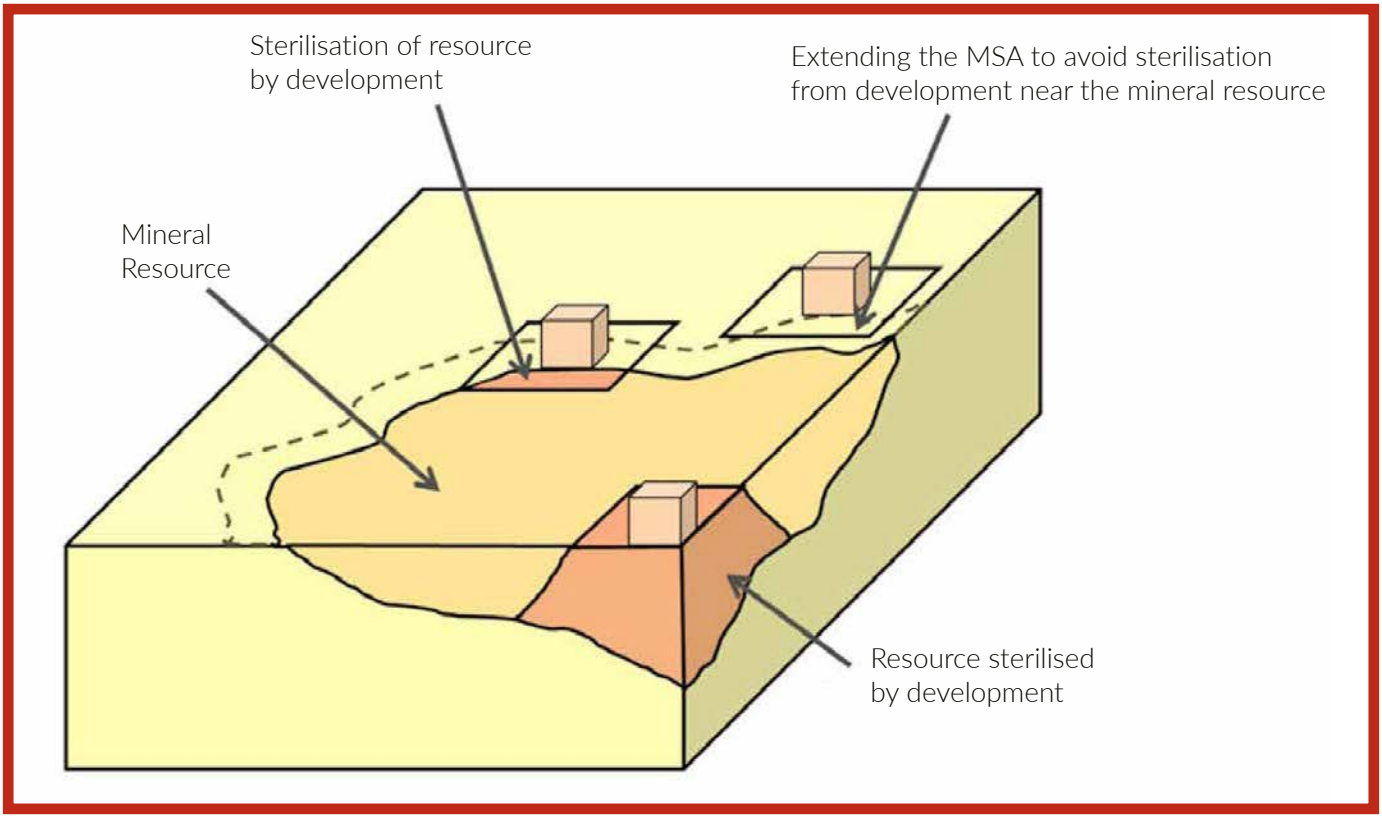
567 An interactive minerals mapping tool is available at www.worcestershire.gov.uk/minerals. It incorporates the Policies Map which defines the Minerals Local Plan's land-use designations and allocations, and also includes additional supporting data to assist in the use and implementation of the Minerals 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 development[568]



7.13 Mineral Consultation Areas[569] include the area covered by the Mineral Safeguarding Areas[570] and an additional 250m around them to ensure both direct and indirect impacts are considered. The Mineral Consultation Areas are defined on the Policies Map[571] and are shown in Figure 7.1.

7.14 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.

Technical assessments

7.15 Policy MLP 41 requires all planning applications for non-exempt development[572] 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.

7.16 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:

568 Adapted from British Geological Survey and The Coal Authority (2011) *Mineral safeguarding in England: good practice advice*, Figure 2.

569 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.

570 Although mineral resources 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

571 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.

572 Table 7.1 and Table 7.2 set out where applications are, or may be exempt development.

Desk-based assessment:

- for aggregates, Worcestershire County Council's *Analysis of Mineral Resources in Worcestershire*[573] 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.[574]

Site-based assessment to supplement and verify desk-based findings:

- techniques may include test pits, exploratory drilling, and geophysical survey.

7.17 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 would be caused by the proposed development, and whether this would significantly reduce the commercial attractiveness of the wider resource area. To minimise the risk of assessments being considered insufficient, applicants should follow the guidance set out in Mineral Products Association and The Planning Officers' Society (April 2019) *Minerals Safeguarding Practice Guidance*, and consult the Mineral Planning Authority on their proposed site investigation plan prior to undertaking any works on-site.

7.18 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.

7.19 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.

7.20 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.

7.21 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.

7.22 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.

573 Worcestershire County Council (2021) *Analysis of Mineral Resources in Worcestershire*, available at www.worcestershire.gov.uk/minerals.

574 Information from the British Geological Survey will provide a starting point, see http://www.bgs.ac.uk/products/minerals/home.html.

7.23 "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.

7.24 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.

7.25 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 weight[575] in making this balanced judgement.

7.26 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.

Incinerator bottom ash processing at Hill and Moor

575 Shadwell Estates Ltd v Breckland District Council v Pigeon (Thetford) 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'".

Policy MLP 42: 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 operation of an existing or planned* mineral site or supporting infrastructure could have a significant adverse effect on new non-mineral development (including changes of use) in its vicinity, the applicant for the non-mineral development (the 'agent of change') will be required to provide any necessary mitigation before the non-mineral 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.

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 not be supported.

* "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.

** Table 7.1 and Table 7.2 set out where applications are, or may be exempt development.

Reasoned justification

Permitted mineral sites and supporting infrastructure sites

7.27 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 or planned businesses and facilities should not have unreasonable restrictions placed on them as a result of non-mineral development permitted after they were established.

7.28 Sites with extant mineral planning permissions are critical to Worcestershire's ability to supply the demand for minerals. It is equally important that sites undergoing restoration and those in aftercare phases are safeguarded so that they are able to achieve the end state envisioned when planning permission was granted. The following categories have been developed for

mineral sites in Worcestershire to indicate their operational status:

- **active:** 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.

7.29 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.[576] 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.

7.30 Permitted mineral sites 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.[577]

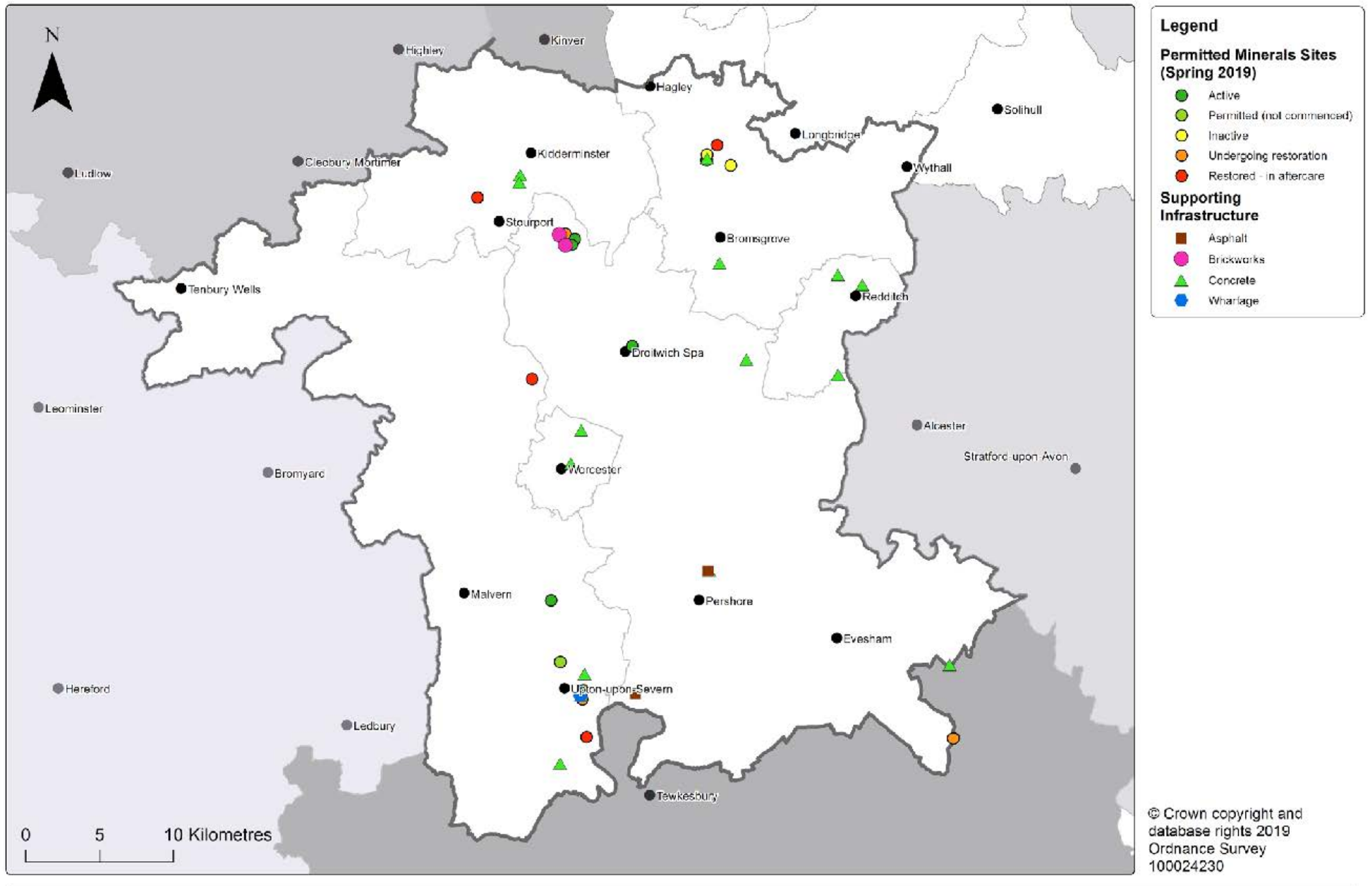
7.31 Different types of development may or may not conflict with the use of minerals sites or supporting infrastructure. The potential for conflict is a function of both the sensitivity of the land use or receptors at the proposed non-exempt development and the techniques or processes employed at those 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.

Processing at Clifton sand and gravel working

576 "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.

577 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 42.

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.

7.32 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.[578] The interactive minerals mapping tool[579] will be updated to show the location and status of mineral sites and supporting infrastructure sites. Figure 7.3 indicates the permitted mineral sites and supporting infrastructure sites to be safeguarded at the point of preparing the Minerals Local Plan.

Technical assessments

7.33 Policy MLP 42 requires all planning applications for non-exempt development[580] proposed within 250m of a permitted mineral site 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.

7.34 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 or the continued operation of a supporting infrastructure site if potential impacts are not considered in advance.

7.35 Where the operation of a mineral site 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'[581]) will be required to provide any necessary mitigation before the development has been completed. 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 or planned 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. 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 planned mineral or infrastructure operators.

7.36 It is expected that the applicant will follow the guidance provided in Mineral Products Association and The Planning Officers' Society (April 2019) *Minerals Safeguarding Practice Guidance*, and 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.

7.37 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.

578 Worcestershire Mineral and Waste Local Development Framework *Authority Monitoring Reports* are available at www.worcestershire.gov.uk/amr.

579 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.

580 Table 7.1 and Table 7.2 set out where applications are, or may be exempt development.

581 Ministry of Housing, Communities and Local Government (July 2021) *National Planning Policy Framework*, paragraph 187.

Restored sand and gravel quarry, Retreat Farm near Grimley

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 41 and MLP 42, 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 committed[582] 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).[583] The *Local Aggregate Assessment* (LAA)[584] 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. The monitoring schedules consider how each of the objectives will be implemented and how their achievement will be monitored. For each objective, the policies that are central to its delivery are identified, together with the key delivery agencies and mechanisms. A range of indicators is provided for each objective, together with baseline data, targets and, where appropriate, review triggers. Some indicators are relevant to more than one objective. Where this is the case the indicator is included in full 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.

582 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/lds.

583 Worcestershire Mineral and Waste Local Development Framework *Authority Monitoring Reports* are available at www.worcestershire.gov.uk/amr.

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

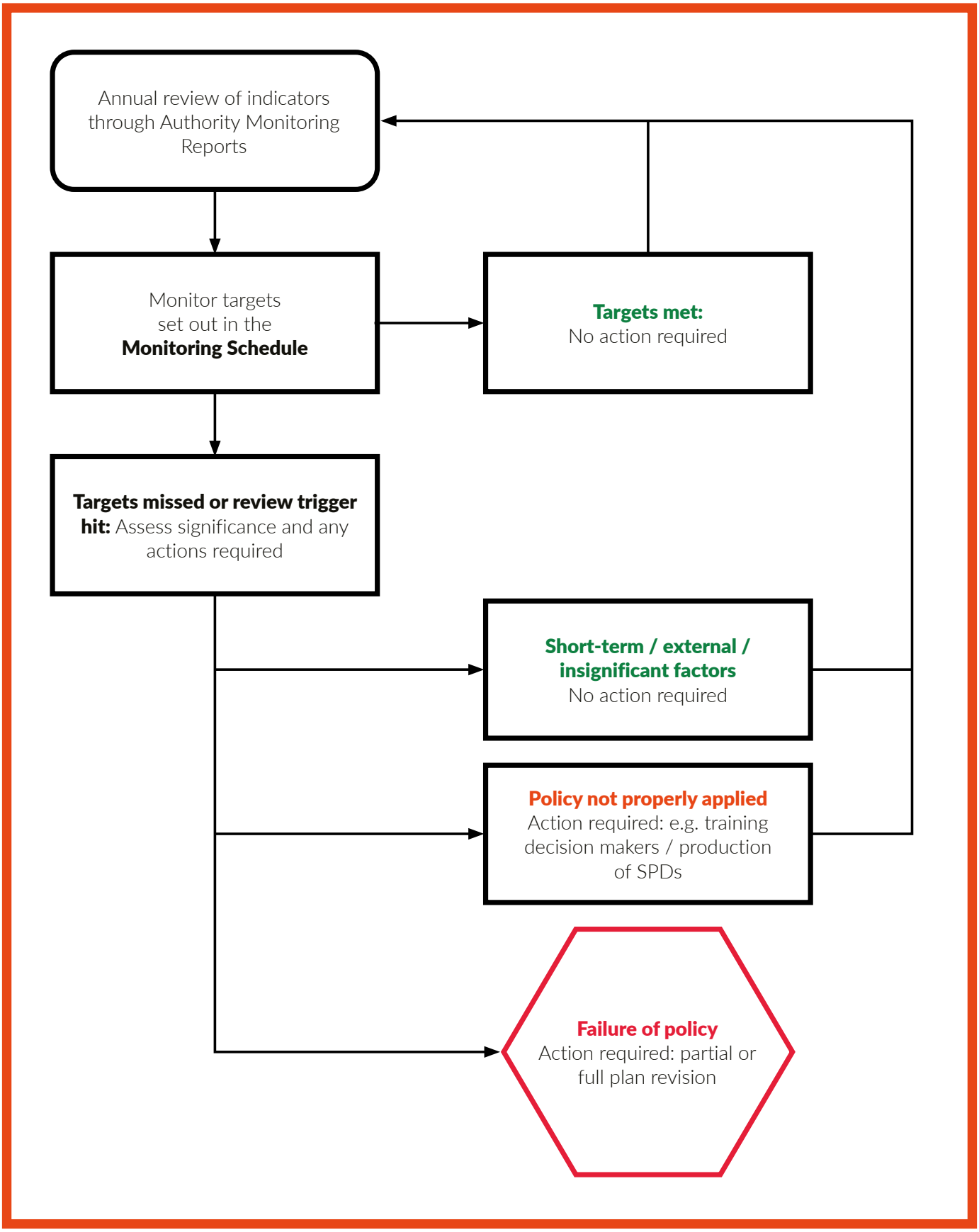
8.10 The monitoring schedules set out a mixture of targets and review triggers. When a failure to meet a target is identified, or a review trigger is hit, the Council will undertake the review process outlined in Figure 8.1. This will establish whether any failure is the result of short-term or other 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.

8.11 The assessment of some indicators will utilise committee reports, delegated reports and any appeal decisions to identify the extent of development permitted and to determine whether the relevant issue has been adequately considered. Reports on monitoring visits to extant sites will also be used to determine whether sites are being developed in conformity with approved plans. Other indicators will be assessed based on national or local data sets regarding production and/or movement of materials, and data about factors influencing the level of demand for minerals, where this is available.

8.12 In addition to regular monitoring through the AMR, a review 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[585]. The AMR will be the primary tool to provide the evidence for this assessment.

585 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

MLP 1: Spatial Strategy

MLP 2: Strategic Location of Development – Specific Sites and Preferred Areas

MLP 3: Strategic Location of Development – Areas of Search and Windfall Sites within the Strategic Corridors

MLP 4: Strategic Location of Development – Windfall Sites outside the Strategic Corridors

MLP 5: Extant Mineral Sites and Safeguarded Resources

MLP 6: Borrow Pits

MLP 13: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply

MLP 14: Scale of Sand and Gravel Provision

MLP 15: Delivering a Steady and Adequate Supply of Sand and Gravel

MLP 16: Scale of Crushed Rock Provision

MLP 17: Delivering a Steady and Adequate Supply of Crushed Rock

MLP 18: Scale of Brick Clay Provision

MLP 19: Delivering a Steady and Adequate Supply of Brick Clay and Clay Products

MLP 20: Scale of Silica Sand Provision

MLP 21: Delivering a Steady and Adequate Supply of Silica Sand

MLP 22: Scale of Building Stone Provision

MLP 23: Delivering an Adequate and Diverse Supply of Building Stone

MLP 24: Supply of Other Locally and Nationally Important Industrial Minerals

MLP 25: Energy Minerals

MLP 26: Efficient Use of Resources

MLP 40: Planning Obligations

MLP 41: Safeguarding Locally and Nationally Important Mineral Resources

MLP 42: 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

West Midlands Aggregate Working Party in advising on Managed Aggregate Supply System and annual Local Aggregate Assessment

Statutory consultees or other appropriate bodies for technical advice

How will we know it is being achieved?

Indicator	Baseline	Target/Review Trigger
1. Location of new permitted reserves (over the life of the plan): a) sand and gravel b) crushed rock c) silica sand d) brick clay e) building stone f) salt/brine g) other industrial minerals h) oil and gas	N/A	Targets: a) 100% of new sand and gravel reserves permitted within the strategic corridors b) 100% of new crushed rock reserves permitted outside the strategic corridors c) 100% of new silica sand reserves permitted within the strategic corridors d) 100% of new brick clay reserves permitted within the strategic corridors e) More than 75% of new building stone reserves permitted within the strategic corridors f) More than 75% of new salt/brine reserves permitted within the strategic corridors g) More than 75% of other industrial mineral reserves permitted within the strategic corridors h) 100% of oil and gas reserves permitted in areas licensed by government for oil and gas exploration or production. Trends may be assessed more fully at periodic review rather than annually, due to the limited number of applications per year.
2. Proportion of permitted mineral development proposals for new mineral developments and extensions to extant sites: a) specific site allocations b) preferred area allocations c) areas of search d) windfall sites within strategic corridors e) windfall sites outside strategic corridors	N/A	Target: This indicator has no target, it is being monitored for information and may reveal trends over time. The reasons for which development outside specific site and preferred area allocations will be monitored and will inform whether any action is necessary (i.e. to address a policy failure) or whether such development is indicating that the policies are providing appropriate flexibility. Review trigger and likely action: Shortfall in specific sites and preferred areas to meet the scale of provision required over the life of the plan – development or review of Mineral Site Allocations Development Plan Document
3. Maintaining a landbank of at least 7 years for sand and gravel	6.06 years (at 31st December 2017)	Target: Landbank of at least 7 years Review trigger: Landbank below 7 years **OR** Decline in landbank for 3 consecutive years

Indicator	Baseline	Target/Review Trigger
4. Maintaining sufficient productive capacity: Maintaining or enhancing the number of sand and gravel sites with permitted reserves in relation to the baseline	4 sites with permitted sand and gravel reserves (at 31st December 2017)	Target: 4 or more sites Review trigger: 1 or more sites coming to the end of their productive life
5. Maintaining sufficient productive capacity: Maintaining or enhancing the number of active sand and gravel sites in relation to the baseline	At 31st December 2017: 3 active sites 1 inactive site	Target: 3 or more active sites Review trigger: 1 or more sites coming to the end of their productive life
6. Maintaining sufficient productive capacity: Maintaining productive capacity at active sites to meet the annual production guideline for sand and gravel	Production guideline in the Local Aggregate Assessment (data covering the period up to 31st December 2017): 0.572 million tonnes	Target: No issues identified through the Local Aggregate Assessment which would prevent the production guideline being met by active sites
7. Securing the steady and adequate supply of crushed rock: importation under the Managed Aggregate Supply System	The constraints on delivering crushed rock production in Worcestershire have been recognised through Duty to Cooperate discussions and surrounding Mineral Planning Authorities are able to accommodate supplying Worcestershire's demand for crushed rock	Target: 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 Review trigger: Significant change in status of constraints in national policy **OR** Surrounding Mineral Planning Authorities are unable to accommodate supplying Worcestershire's demand for crushed rock

Indicator	Baseline	Target/Review Trigger
8. Achieving and maintaining supply from indigenous resources: Maintaining or enhancing the number of crushed rock sites with permitted reserves in relation to the baseline	0 (at 31st December 2017)	Target: At least 1 site (If target missed: No review required if duty to cooperate discussions continue to indicate that surrounding Mineral Planning Authorities are able to accommodate Worcestershire's demand for crushed rock) Review trigger: Surrounding Mineral Planning Authorities are unable to accommodate Worcestershire's demand for crushed rock
9. Achieving and maintaining supply from indigenous resources: Maintaining or enhancing the number of active crushed rock sites in relation to the baseline	0 (at 31st December 2017)	Target: At least 1 active site (If target missed: No review required if duty to cooperate discussions continue to indicate that surrounding Mineral Planning Authorities are able to accommodate Worcestershire's demand for crushed rock) Review trigger: surrounding Mineral Planning Authorities are unable to accommodate supplying Worcestershire's demand for crushed rock
10. Achieving and maintaining supply from indigenous resources: Maintaining sufficient productive capacity to meet the annual production guideline or the sub-regional apportionment for crushed rock	Production guideline in the Local Aggregate Assessment (data covering the period up to 31st December 2018): 0 million tonnes Sub-regional apportionment derived from the National and regional guidelines for aggregate provision in England 2001-2016: 0.163 million tonnes	Target: No issues identified through the Local Aggregate Assessment which would prevent the production guideline (or sub-regional apportionment, as appropriate) being met by active sites in Worcestershire. Review trigger: Issues identified through the Local Aggregate Assessment AND surrounding Mineral Planning Authorities are unable to accommodate supplying Worcestershire's demand for crushed rock
11. 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

Indicator	Baseline	Target/Review Trigger
12. Sufficient stock of permitted brick clay reserves for the life of the plan	The stock of permitted reserves in December 2016[586] would last approximately 63 years (to 2079) based on the 10 year average of known annual sales (0.126 million tonnes per year), but based on the sites' maximum potential output this could be less than 25 years (to 2040).	Target: Permitted brick clay reserves in the county sufficient to last until at least 2036.
13. Maintaining productive capacity: 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 submission December 2019)	Target: 2 or more sites Review trigger: 1 or more sites coming to the end of their productive life.
14. Maintaining productive capacity: Maintaining or enhancing the number of active brick clay sites in relation to the baseline	2 active sites (at point of plan submission December 2019)	Target: 2 or more active sites Review trigger: 1 or more sites coming to the end of their productive life.
15. Maintaining productive capacity: 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 submission December 2019)	Target: 1 or more sites Review trigger: 1 or more sites coming to the end of their productive life.
16. Maintaining productive capacity: Maintaining or enhancing the number of active silica sand sites in relation to the baseline.	1 active site (at point of plan submission December 2019)	Target: 1 or more active sites Review trigger: 1 or more sites coming to the end of their productive life.
17. 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
18. 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

586 As provided in confidential discussions with the operator of the clay sites in Worcestershire, Weinerberger, in April 2017

Indicator	Baseline	Target/Review Trigger
19. The number of active salt or brine sites	1 active site (at point of plan submission December 2019)	This indicator has no target, it is being monitored for information and may reveal trends over time
20. 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
21. No change in status of coal deposits in the county by the Coal Authority	No coal resources of commercial value	Review trigger: Any coal resources in Worcestershire identified to be of commercial value (as assessed by the Coal Authority)
22. No change in the number of Petroleum Exploration and Development Licence areas within the county	0	Review trigger: Issue of Petroleum Exploration and Development Licence areas within the county
23. Percentage of mineral 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%)	Target: In line with Government targets for planning performance
Reference will also be made to the following indicators under this objective: Indicator 25 (MO 2) Indicators 55, 62, 63, 64, 65 (MO 6)		

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: Spatial Strategy

MLP 2: Strategic Location of Development – Specific Sites and Preferred Areas

MLP 3: Strategic Location of Development – Areas of Search and Windfall Sites within the Strategic Corridors

MLP 4: Strategic Location of Development – Windfall Sites outside the Strategic Corridors

MLP 5: Extant Mineral Sites and Safeguarded Resources

MLP 6: Borrow Pits

MLP 7: Green Infrastructure

MLP 8: Avon and Carrant Brook Strategic Corridor

MLP 9: Lower Severn Strategic Corridor

MLP 10: North East Worcestershire Strategic Corridor

MLP 11: North West Worcestershire Strategic Corridor

MLP 12: Salwarpe Tributaries Strategic Corridor

MLP 30: Access and Recreation

MLP 31: Biodiversity

MLP 32: Historic Environment

MLP 33: Landscape

MLP 34: Soils

MLP 35: Best and Most Versatile Agricultural Land

MLP 36: Geodiversity

MLP 37: Water Quality and Quantity

MLP 38: Flooding

MLP 39: Transport

MLP 40: 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/Review Trigger
24. Percentage of permitted mineral development proposals that adequately demonstrate how they will conserve and enhance networks of green infrastructure throughout the life of the development by adequately taking account of each of the considerations listed in Policy MLP 7 (a-e)	N/A	Target: 100% of the mineral developments which are granted planning permission Each of the considerations listed in Policy MLP 7 (a-e) will be monitored and reported on individually.
25. All extant mineral sites delivering development in accordance with approved working, restoration and aftercare plans	N/A	Target: 100% of the mineral developments which are granted planning permission
26. 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. Monitoring may draw upon information in planning applications, restoration schemes, and site monitoring reports to monitor proposed and actual delivery of the priorities. To monitor whether the priorities remain appropriate, details in mineral planning applications will be considered to identify whether there are consistently any economic, social and/or environmental factors which outweigh the benefits of delivering the strategic corridor priorities, or whether any site-specific circumstances and/or other policies in the development plan consistently limit the ability to deliver one or more of the strategic corridor priorities.

Indicator	Baseline	Target/Review Trigger
27. 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 Monitoring may draw upon information in planning applications, restoration schemes, and site monitoring reports to monitor proposed and actual delivery of the priorities. To monitor whether the priorities remain appropriate, details in mineral planning applications will be considered to identify whether there are consistently any economic, social and/or environmental factors which outweigh the benefits of delivering the strategic corridor priorities, or whether any site-specific circumstances and/or other policies in the development plan consistently limit the ability to deliver one or more of the strategic corridor priorities.
28. 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. Monitoring may draw upon information in planning applications, restoration schemes, and site monitoring reports to monitor proposed and actual delivery of the priorities. To monitor whether the priorities remain appropriate, details in mineral planning applications will be considered to identify whether there are consistently any economic, social and/or environmental factors which outweigh the benefits of delivering the strategic corridor priorities, or whether any site-specific circumstances and/or other policies in the development plan consistently limit the ability to deliver one or more of the strategic corridor priorities.

Indicator	Baseline	Target/Review Trigger
29. 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. Monitoring may draw upon information in planning applications, restoration schemes, and site monitoring reports to monitor proposed and actual delivery of the priorities. To monitor whether the priorities remain appropriate, details in mineral planning applications will be considered to identify whether there are consistently any economic, social and/or environmental factors which outweigh the benefits of delivering the strategic corridor priorities, or whether any site-specific circumstances and/or other policies in the development plan consistently limit the ability to deliver one or more of the strategic corridor priorities.
30. 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. Monitoring may draw upon information in planning applications, restoration schemes, and site monitoring reports to monitor proposed and actual delivery of the priorities. To monitor whether the priorities remain appropriate, details in mineral planning applications will be considered to identify whether there are consistently any economic, social and/or environmental factors which outweigh the benefits of delivering the strategic corridor priorities, or whether any site-specific circumstances and/or other policies in the development plan consistently limit the ability to deliver one or more of the strategic corridor priorities.
Reference will also be made to the following indicators under this objective: Indicators 1, 2 (MO 1) Indicators 32, 33, 34, 35, 36, 37 (MO 3) Indicator 46 (MO 4) Indicator 53 (MO 5) Indicator 61 (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

MLP 1: Spatial Strategy

MLP 2: Strategic Location of Development – Specific Sites and Preferred Areas

MLP 3: Strategic Location of Development – Areas of Search and Windfall Sites within the Strategic Corridors

MLP 4: Strategic Location of Development – Windfall Sites outside the Strategic Corridors

MLP 5: Extant Mineral Sites and Safeguarded Resources

MLP 7: Green Infrastructure

MLP 8: Avon and Carrant Brook Strategic Corridor

MLP 9: Lower Severn Strategic Corridor

MLP 10: North East Worcestershire Strategic Corridor

MLP 11: North West Worcestershire Strategic Corridor

MLP 12: Salwarpe Tributaries Strategic Corridor

MLP 22: Scale of Building Stone Provision

MLP 23: Delivering an Adequate and Diverse Supply of Building Stone

MLP 26: Efficient Use of Resources

MLP 27: Green Belt

MLP 29: Air Quality

MLP 30: Access and Recreation

MLP 31: Biodiversity

MLP 31: Historic Environment

MLP 32: Landscape

MLP 34: Soils

MLP 35: Best and Most Versatile Agricultural Land

MLP 36: Geodiversity

MLP 37: Water Quality and Quantity

MLP 38: Flooding

MLP 39: Transport

MLP 40: 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/review trigger
31. All permitted mineral extraction and/or engineering operations within the Green Belt adequately demonstrate that they meet the requirements of policy MLP 27.	N/A	Target: 100% of permitted mineral extraction and/or engineering operations within the Green Belt
32. All permitted mineral developments adequately demonstrate that they will conserve, enhance and deliver net gains for biodiversity	N/A	Target: 100% of the mineral developments which are granted planning permission
33. All permitted mineral developments adequately demonstrate that they will conserve and, where possible, enhance the historic environment	N/A	Target: 100% of the mineral developments which are granted planning permission
34. All permitted mineral developments adequately demonstrate that they will conserve and enhance the character and distinctiveness of the landscape, including inherent landscape character and Areas of Outstanding Natural Beauty	N/A	Target: 100% of the mineral developments which are granted planning permission
35. All permitted mineral developments adequately demonstrate that they will conserve and enhance geodiversity	N/A	Target: 100% of the mineral developments which are granted planning permission
36. All permitted mineral developments adequately demonstrate that they will protect and, where possible, enhance the quality, quantity and flow of surface water and groundwater resources	N/A	Target: 100% of the mineral developments which are granted planning permission
37. All permitted mineral developments adequately demonstrate that they will avoid increasing flood risk to people and property on site or elsewhere and contribute, where possible, to a reduction in overall flood risk	N/A	Target: 100% of the mineral developments which are granted planning permission
Reference will also be made to the following indicators under this objective: Indicators 1, 2, 17, 18 (MO 1) Indicators 24, 25, 26, 27, 28, 29, 30 (MO 2) Indicator 46 (MO 4) Indicator 53 (MO 5) Indicators 60, 61 (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: Spatial Strategy

MLP 2: Strategic Location of Development – Specific Sites and Preferred Areas

MLP 3: Strategic Location of Development – Areas of Search and Windfall Sites within the Strategic Corridors

MLP 4: Strategic Location of Development – Windfall Sites outside the Strategic Corridors

MLP 5: Extant Mineral Sites and Safeguarded Resources

MLP 6: Borrow Pits

MLP 7: Green Infrastructure

MLP 8: Avon and Carrant Brook Strategic Corridor

MLP 9: Lower Severn Strategic Corridor

MLP 10: North East Worcestershire Strategic Corridor

MLP 11: North West Worcestershire Strategic Corridor

MLP 12: Salwarpe Tributaries Strategic Corridor

MLP 28: Amenity

MLP 29: Air Quality

MLP 30: Access and Recreation

MLP 38: Flooding

MLP 39: Transport

MLP 40: Planning Obligations

MLP 42: 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/review trigger
38. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity or health and well-being from dust	N/A	Target: 100% of mineral developments which are granted planning permission
39. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity or health and well-being from odour	N/A	Target: 100% of mineral developments which are granted planning permission
40. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity or health and well-being from noise and vibration	N/A	Target: 100% of mineral developments which are granted planning permission
41. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity or health and well-being from light	N/A	Target: 100% of mineral developments which are granted planning permission
42. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse on amenity or health and well-being from visual impacts	N/A	Target: 100% of mineral developments which are granted planning permission
43. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on amenity or health and well-being from contamination	N/A	Target: 100% of mineral developments which are granted planning permission
44. All permitted mineral developments adequately demonstrate that they will not give rise to an unacceptable adverse effect on air quality	N/A	Target: 100% of mineral developments which are granted planning permission
45. All permitted mineral developments adequately demonstrate how they will help to secure net improvements in overall air quality or adequately demonstrate why this is not possible.	N/A	Target: 100% of mineral developments which are granted planning permission.
46. All permitted mineral developments adequately demonstrate that they will protect and enhance rights of way and public access provision	N/A	Target: 100% of mineral developments which are granted planning permission
47. All permitted mineral developments adequately demonstrate that they will use the most sustainable transport options for the movement of minerals and materials	N/A	Target: 100% of mineral developments which are granted planning permission
48. All permitted mineral developments adequately demonstrate that they will provide safe access for employees and visitors	N/A	Target: 100% of the developments which are granted planning permission

Indicator	Baseline	Target/review trigger
49. 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	Target: 100% of the developments which are granted planning permission
50. 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	Target: 100% of mineral developments which are granted planning permission
51. Number of active liaison committees for extant mineral developments	5 (during 2018)	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 1, 2 (MO 1) Indicators 24, 25, 26, 27, 28, 29, 30 (MO 2) Indicator 37 (MO 3) Indicators 62, 63, 64, 65 (MO6)		

Monitoring schedule for Objective MO 5: Protect and enhance the vitality of the local economy

How will this be achieved?

Policy framework

MLP 1: Spatial Strategy

MLP 2: Strategic Location of Development – Specific Sites and Preferred Areas

MLP 3: Strategic Location of Development – Areas of Search and Windfall Sites within the Strategic Corridors

MLP 4: Strategic Location of Development – Windfall Sites outside the Strategic Corridors

MLP 5: Extant Mineral Sites and Safeguarded Resources

MLP 6: Borrow Pits

MLP 7: Green Infrastructure

MLP 8: Avon and Carrant Brook Strategic Corridor

MLP 9: Lower Severn Strategic Corridor

MLP 10: North East Worcestershire Strategic Corridor

MLP 11: North West Worcestershire Strategic Corridor

MLP 12: Salwarpe Tributaries Strategic Corridor

MLP 13: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply

MLP 14: Scale of Sand and Gravel Provision

MLP 15: Delivering a Steady and Adequate Supply of Sand and Gravel

MLP 16: Scale of Crushed Rock Provision

MLP 17: Delivering a Steady and Adequate Supply of Crushed Rock

MLP 18: Scale of Brick Clay Provision

MLP 19: Delivering a Steady and Adequate Supply of Brick Clay and Clay Products

MLP 20: Scale of Silica Sand Provision

MLP 21: Delivering a Steady and Adequate Supply of Silica Sand

MLP 22: Scale of Building Stone Provision

MLP 23: Delivering an Adequate and Diverse Supply of Building Stone

MLP 24: Supply of Other Locally and Nationally Important Industrial Minerals

MLP 25: Energy Minerals

MLP 26: Efficient Use of Resources

MLP 28: Amenity

MLP 29: Air Quality

MLP 30: Access and Recreation

MLP 34: Soils

MLP 35: Best and Most Versatile Agricultural Land

MLP 38: Flooding

MLP 39: Transport

MLP 40: Planning Obligations

MLP 41: Safeguarding Locally and Nationally Important Mineral Resources

MLP 42: 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 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/review trigger
52. 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	Target: 100% of mineral developments which are granted planning permission
53. 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	Target: 100% of mineral developments which are granted planning permission
54. 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)	Target: % of Worcestershire's GVA from mineral development ≥0.03%
Reference will also be made to the following indicators under this objective: Indicators 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 (MO 1) Indicators 24, 25, 26, 27, 28, 29, 30 (MO 2) Indicator 37 (MO 3) Indicators 47, 48 (MO 4) Indicators 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65 (MO 6)		

Monitoring schedule for Objective MO 6: Prudent use of natural resources

How will this be achieved?

Policy framework

MLP 1: Spatial Strategy

MLP 2: Strategic Location of Development – Specific Sites and Preferred Areas

MLP 3: Strategic Location of Development – Areas of Search and Windfall Sites within the Strategic Corridors

MLP 4: Strategic Location of Development – Windfall Sites outside the Strategic Corridors

MLP 5: Extant Mineral Sites and Safeguarded Resources

MLP 6: Borrow Pits

MLP 13: Contribution of Substitute, Secondary and Recycled Materials and Mineral Waste to Overall Minerals Supply

MLP 26: Efficient Use of Resources

MLP 34: Soils

MLP 40: Planning Obligations

MLP 41: Safeguarding Locally and Nationally Important Mineral Resources

MLP 42: Safeguarding Mineral Sites and Supporting Infrastructure

Responsible bodies

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/review trigger
55. 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
56. All permitted borrow pits adequately demonstrate that they are operationally related to a specific project	N/A	Target: 100% of the borrow pit developments which are granted planning permission
57. All permitted mineral developments adequately demonstrate that they will minimise the use of water in buildings, plant and transport	N/A	Target: 100% of mineral developments which are granted planning permission
58. All permitted mineral developments adequately demonstrate that they will minimise the use of energy in buildings, plant and transport	N/A	Target: 100% of mineral developments which are granted planning permission

Indicator	Baseline	Target/review trigger
59. All permitted mineral developments adequately demonstrate that they will optimise energy generation from renewable and low-carbon sources	N/A	Target: 100% of mineral developments which are granted planning permission
60. 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 by adequately taking account of each of the considerations listed in Policy MLP 26 c) (i-vii)	N/A	Target: 100% of mineral developments which are granted planning permission
61. All permitted mineral developments adequately demonstrate how they will protect and conserve soil resources	N/A	Target: 100% of mineral developments which are granted planning permission
62. All applications for non-exempt development proposed within or partially within the Mineral Consultation Areas defined on the Policies Map include an assessment of the potential impact of the development on sterilising mineral resources.	N/A	Target: WCC to agree a protocol, policies or guidance with Borough, City and District LPAs to support this.
63. Percentage of applications where the specific consultation response from Mineral Planning Authority with regard to safeguarding is given weight in the planning balance (as detailed in officer and committee reports)	N/A	Target: 100% of applications with a specific response from the Mineral Planning Authority.
64. The sequential approach to avoiding or minimising sterilisation by non-mineral development has been applied in accordance with Policy MLP 41.	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. The number of applications commented on by the MPA which subsequently include conditions regarding safeguarding will be monitored for information and may reveal trends over time.
65. The agent of change principle is applied where non-mineral development is proposed in the vicinity of an existing or planned mineral site.	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. The number of applications commented on by the MPA which subsequently include conditions regarding safeguarding will be monitored for information and may reveal trends over time.
Reference will also be made to the following indicators under this objective: Indicator 11 (MO 1) Indicator 25 (MO 2)		

Broadway Quarry (Oolitic limestone) at Fish Hill near Broadway

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.

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.[587] 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.[588]

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.

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*[589] 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.

587 *Second Stage Consultation on the Minerals Local Plan*, see "step 4" on pages 57-58, available at www.worcestershire.gov.uk/minerals.

588 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.

589 Based on Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, 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).

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 resources[590] 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 58.8% (by area) of Worcestershire's key and significant terrace and glacial sand and gravel resources and 87.9% (by area) of Worcestershire's key and significant solid sand resources.[591]

Aggregates – crushed rock

A.2.9 The *Analysis of Minerals Resources* takes account of viability, environmental and amenity screening criteria.[592] After applying these criteria, no clusters of key or significant 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,[593] 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 17 of the screened former building stone quarries.

Brick clay

A.2.11 Following screening against viability, environmental and amenity criteria,[594] 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 20.7% (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 78.4% of the screened Droitwich Halite Member resources.[595]

590 Based on Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, 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).

591 Based on Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground.

592 Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground. The *Analysis of Minerals Resources* takes account of viability, 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.

593 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.

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595 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.

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 88.9% (by area) of the screened Wildmoor Sandstone Formation.[596]

Energy Minerals

A.2.14 Energy minerals have not led to the identification of the strategic corridors, as there are no commercially viable coal resources[597] and no known oil or gas deposits in the county, and there are no blocks licenced in or near to Worcestershire under the government's 14th Onshore Oil and Gas Licensing round.[598]

Identifying the strategic corridors: green infrastructure components

Landscape

A.2.15 Within Worcestershire, there is a strong relationship between the location of mineral resources and the character of landscapes where they are found.

A.2.16 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 Assessment*[599] has undertaken this assessment for the entire county. The assessment identifies the landscape character types[600] for individual parcels of land, establishing precise boundaries where the landscape character changes.

A.2.17 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.2.18 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.

Biodiversity

A.2.19 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.2.20 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.

596 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.

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

598 Information about the Onshore Oil and Gas Licensing Rounds is available at https://www.ogauthority.co.uk/licensing-consents.

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

600 Landscape type profiles can be downloaded from the Worcestershire *Landscape Character Assessment* webpages at www.worcestershire.gov.uk/lca.

Water environment

A.2.21 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.[601]

Geodiversity

A.2.22 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.2.23 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.2.24 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.2.25 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.

Access and recreation

A.2.26 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.2.27 Once coherent clusters of resources were identified to form strategic corridors, the corridor boundaries were trimmed to remove settlement boundaries and site allocations.[602] 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.2.28 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.[603]

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

602 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.

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

A.2.29 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.2.30 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 Parcels[604] which contain key and significant terrace and glacial sand and gravel resources.[605]

A.2.31 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.2.32 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.2.33 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* sub-area "Lower Severn Corridor and Leadon Vale" which mirrors the *Water Framework Directive* "Severn Vale" catchment. This boundary separates the strategic corridor from the settlement of Worcester.

A.2.34 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.2.35 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.[606]

A.2.36 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.2.37 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.

604 Landscape Character Parcels are the smallest units used in the process of landscape characterisation in Worcestershire's *Landscape Character Assessment*.

605 Based on Worcestershire County Council (2021) *Analysis of Mineral Resources*, available at www.worcestershire.gov.uk/mineralsbackground.

606 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.

A.2.38 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.2.39 The Salwarpe Tributaries Strategic Corridor encompasses the Principal Timbered Farmlands landscape type within the *River Severn Catchment Flood Management Plan* sub-area "Telford, Black Country, Bromsgrove, Kidderminster & Coventry Cluster".[607] 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.2.40 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.

607 This mirrors the *Water Framework Directive* "Severn Middle Worcestershire" catchment.

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 into 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).

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.

Ancient woodland

An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland mainly made up of trees and shrubs native to the site, usually arising from natural regeneration; and plantations on ancient woodland sites - replanted with conifer or broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi wood pastures identified as ancient; and historic parkland, which is protected as a heritage asset in the NPPF. 'Wooded continuously' does not mean there's been a continuous tree cover across the whole site. Not all trees in the woodland have to be old. Open space, both temporary and permanent, is an important component of ancient woodlands.

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.

Designated heritage asset

A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.

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

Sites with extant planning permissions. 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.

Exploration

The process of physical investigation to establish the presence, extent and economic viability of a mineral resource.

Extant sites

Sites with extant planning permissions. 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.

Flood Risk Assessment

A site-specific assessment carried out by, or on behalf of, a developer to assess the flood risk to and from a development site.

Floodplain connectivity

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.

Fracking

"Fracking", short for "hydraulic fracturing", involves the fracturing of rock using a hydraulically pressurised liquid comprising water, sand and chemicals that is injected into drilled wells to create cracks through which oil or gas in the bedrock can flow.

Geodiversity

The variety of earth materials, forms and processes that constitute and shape the Earth, either the whole or a specific part of it. These include rocks, minerals, soils and landforms.

Geopark

A Geopark is a unified area with geological heritage of international significance.

The Abberley and Malvern Hills Geopark covers parts of the four counties of Gloucestershire, Herefordshire, Shropshire and Worcestershire. The Geopark exists to promote excellence in geoconservation and to make a contribution to local economies through sustainable geotourism (http://geopark.org.uk/pub/).

The Cotswold Hills Geopark stretches between Stroud, Cirencester and Stow- on-the-Wold, crossing into the south-east corner of Worcestershire around the village of Broadway. The Cotswold Hills Geopark aims to win recognition for the area as one of outstanding geodiversity which has strongly influenced the history and heritage of the area (http://www.cotswoldhillsgeopark.net/geopark.html).

Glacial deposits

Sediment deposited by a glacier.

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

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.

Green infrastructure components considered in the planning, designing and management of green infrastructure include biodiversity, the landscape, the historic environment, the water environment, geodiversity, and publicly accessible green spaces and informal recreation sites.

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).

Historic environment

All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.

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.

Local Geological Site

Locally designated sites that have been identified by local geoconservation groups as being of local importance and then notified to local authority planning departments as sites in need of protection from future development. They can be viewed as 'point data' on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals. Developers will need to liaise with the Herefordshire & Worcestershire Earth Heritage Trust to access more detailed data, and there may be a charge for this data (https://www.earthheritagetrust.org/).

Locally designated sites

In Worcestershire, locally designated sites for biodiversity are known as "Local Wildlife Sites", and sites containing habitats and species of principal importance are those recognised as being of principal importance under Section 41 of the Natural Environment and Rural Communities Act 2006, as well as those identified locally by the Worcestershire Biodiversity Partnership. Sites designated locally for their geological interest are known as "Local Geological Sites".

Local policies

The National Planning Policy Framework (July 2021) 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.

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.

Local Wildlife Site

Non-statutory, locally designated sites notable for their value in representing the most important and most distinctive species and habitat features of substantive nature conservation value in the county.

They can be viewed as 'point data' on the interactive minerals mapping tool available at www.worcestershire.gov.uk/minerals. Developers will need to liaise with the Worcestershire Biological Records Centre to access more detailed data, and there may be a charge for this data: (http://www.wbrc.org.uk/WBRC/searches.html).

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 allocation

For this Minerals Local Plan, mineral allocation 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.

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

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.

The lifetime of a mineral development includes site preparation, operation (extraction and/or processing), reclamation and restoration, and aftercare.

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.

Minerals resources of local and national importance

Minerals which are necessary to meet society's needs, including aggregates, brickclay (especially Etruria Marl and fireclay), silica sand (including high grade silica sands), coal derived fly ash in single use deposits, 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.

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.

Minerals sites and supporting infrastructure

Existing and permitted primary extraction sites, including sites that are active, inactive, undergoing restoration or in after-care, and infrastructure sites which support mineral delivery, including: 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.

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 "Minerals resources of local and national importance".

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 (July 2021) 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".

Oolitiic Limestone

A carbonate rock made up mostly of ooliths which are sand-sized carbonate particles that have concentric rings of CaCO3. These rings are formed around grains of sand or shell fragments that were rolled around on the shallow sea floor, gathering layer after layer of limestone.

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.

Ramsar sites

Wetlands of international importance, designated under the 1971 Ramsar Convention.

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 from industrial wastes such as glass (cullet), incinerator bottom ash, coal derived fly ash, railway ballast, fine ceramic waste (pitcher), and scrap tyres; and industrial and minerals by-products, notably waste from china clay, coal and slate extraction and spent foundry sand. These can also include hydraulically bound materials.

Sensitive receptors

Sensitive receptors include:

- people in their homes, schools, places of work and recreation, including any potential future occupants of sites allocated in Local Plans or Neighbourhood Plans; and
- businesses, including agriculture and tourism.

Particular attention may need to be paid to how any impacts would affect disadvantaged sections of communities.

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.

Special Protection Area (SPA)

An area classified under regulation 15 of the Conservation of Habitats and Species Regulations 2017 which has been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds.

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

The National Planning Policy Framework (July 2021) 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).

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.

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.

Windfall site

Those sites which become available for development unexpectedly and are therefore not included as a mineral allocation in a development plan document.

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.

Appendix 4: Acronyms

Acronym	Description
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.

Phone: 01905 766374

Email: minerals@worcestershire.gov.uk

Write to:
Minerals and Waste Planning Policy
Worcestershire County Council
County Hall
Spetchley Road
Worcester
WR5 2NP

For Development Management queries please contact devcontrolteam@worcestershire.gov.uk or 01905 763763.

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

worcestershire
county council