Worcestershire Minerals Local Plan

Second Consultation

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

worcestershire county council

Table of Contents

Processing at Clifton sand and gravel working

1. What are minerals and why do we need them?

1.1 Minerals are an essential raw material in our daily lives. Without minerals, we would not be able to build our houses, schools, hospitals, roads and railway lines, and this is only part of what minerals are used for.

1.2 Different types of minerals are used for different things:

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

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

Beckford Nature Reserve, a former sand and gravel working

2. What is a Minerals Local Plan and why do we need one?

2.1 Minerals need to be 'won' for us to be able to use them. This means that they need to be dug from the ground or extracted from the sea. Minerals can come from the land or sea (primary sources), they can be a by-product of other industrial processes (secondary sources) or they can be substituted by materials like crushed bricks or concrete (recycled sources).

2.2 The planning system needs to make sure that there are enough minerals for our current needs and that enough minerals are safeguarded for use in the future. It is a national requirement for County Councils to have planning policies for the winning of minerals. The Council's current policies are set out in the 1997 adopted Hereford and Worcester Minerals Local Plan, (subsequently referred to as the current Minerals Local Plan). These policies are dated and need replacing. One of the primary roles of the Minerals Local Plan is to set out guidelines for the amount of minerals which should come from Worcestershire.

2.3 It is also the role of the Minerals Local Plan to balance the need for minerals and benefits sites can bring against any impacts they might have. To do this, the Minerals Local Plan should make the most of the positives and minimise any negatives from minerals sites. It will include policies to make sure that development happens in the right places, and put the right policies in place to control impacts from development.

2.4 A "mineral working" or site is always temporary because once all of the mineral has been 'won' the site will no longer be useful for mineral extraction and an afteruse will have to be established. The process of preparing a site for its agreed afteruse is commonly referred to as "restoration", even though sites are not always returned to their original use. The Minerals Local Plan will also include policies about restoration.

2.5 Once completed, the new Minerals Local Plan will be used by the County Council to make decisions about planning applications for mineral extraction and processing in Worcestershire.

Fish Hill Quarry

3. What is the Council going to do about it?

3.1 We are currently preparing a new Minerals Local Plan to set out the mineral planning policy for the whole of Worcestershire. When it is finished and adopted it will set out:

- What minerals we have in Worcestershire;
- How much we need to provide and when we need to provide it;
- How minerals sites should be worked;
- Where minerals should be extracted;
- How minerals sites should be restored; and
- Where minerals should be safeguarded for use in the future.

It will be used by the County Council to determine planning applications for mineral development and will replace the current Minerals Local Plan.

3.2 It will be a long-term plan and national policy expresses a preference for these plans to cover 15 years, whilst taking into account longer term requirements.[1]

In the previous consultation...

3.3 We consulted on our initial ideas in October 2012 – January 2013. We have taken on board the comments we received and we have used them to inform the approach set out in this consultation.

Our approach now...

3.4 This consultation includes:

- **A portrait of Worcestershire** giving an overview of the minerals found in Worcestershire and identifying the key issues affecting the county.
- **A draft vision and objectives** for what we think the Minerals Local Plan should aim to achieve.
- **Details of how much of each mineral we need to provide and when** including alternative methods considered in making this calculation and options for when it should be provided.
- **Our ideas about how minerals should be worked**, setting out the issues to be considered when developing criteria to manage working practices.
- **Our ideas about where minerals should be worked**, setting out the issues to be considered when developing location criteria for all mineral workings and identifying "areas of search" for aggregates and an "opportunity area" for clay.
- **Our ideas about how mineral workings should be restored**, setting out issues to be considered when developing high-level principles for all workings and our proposed approach to identifying key considerations and restoration priorities for each individual "Area of Search".
- **Details of how minerals should be safeguarded for future use** including alternative options to consider.

1 National Planning Policy Framework, paragraph 157.

Archaeological investigation at Clifton sand and gravel working

4. Why should you get involved?

4.1 We have to prepare planning policy for minerals in the county but we can't do this alone. We need your help to make sure that we have the correct evidence to base our decisions on and, importantly, to make sure we know what matters most to you, your business and your community.

4.2 Different people will be able to play a part in helping shape the plan in different ways. For example, we need **residents, parish councils** and **community groups** to help provide information about their local area to ensure that the policies we develop protect the things most valued by you. Your feedback will also help us to make sure that restored sites will be valued by future generations.

4.3 **Mineral companies** can help us to understand where the best minerals are found, whether we have made the right assumptions about the resources and whether the policies in the plan will work in reality. This is important so that we know that the final plan can be delivered as expected.

4.4 Similarly, **special interest groups** and **national advisory bodies** can assist with the expertise to help us develop effective policies. They can also provide us with information on any specific priorities that could or should be delivered through the Minerals Local Plan.

4.5 It is useful for us to get as much information as possible as soon as possible to help us to plan positively for the future.

5. How can you get involved?

There are plenty of ways for you to get involved:

Respond to this document...

This document outlines our approach so far and includes questions to highlight the issues that we would most like your opinion on. The questions can be answered by completing the questionnaire online, or downloading and printing or emailing the completed form to us:

The online questionnaire is available at:
www.worcestershire.gov.uk/minerals
Email: minerals@worcestershire.gov.uk
Post: FREEPOST SWC-1253
Minerals and Waste Planning Policy
Worcestershire County Council
County Hall, Worcester, WR5 2NP

Please return any questionnaires to us by **Friday 31st January 2014.**

There are a lot of different issues considered in this consultation; if you only wish to comment on specific issues please feel free to just focus on these questions.

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

Find out more...

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

Worcester Woods Country Park
from 10am - 3.30pm on Saturday 30th November 2013

Spadesbourne Suite at Bromsgrove District Council Offices
from 2.30pm - 8.00pm on Wednesday 4th December

Kidderminster Library
from 10am - 3.30pm on Saturday 7th December 2013

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

Give us a call and talk to Nick Dean the Minerals and Waste Planning Policy Manager on **(01905) 766374**

Attend our industry workshop.
This session is aimed specifically at operators to get an industry perspective and to focus on technical issues and deliverability. Please email minerals@worcestershire.gov.uk to register an interest.

Attend our green infrastructure workshop.
This session is aimed at organisations involved in delivering and managing green infrastructure in and around the county. It will focus on the implementation and deliverability of our restoration aspirations. Please email minerals@worcestershire.gov.uk to register an interest.

Test your knowledge...

New to minerals planning? Have a go at our interactive quiz on minerals at www.worcestershire.gov.uk/minerals - maybe even challenge your friends.

Dig Deeper...

We will be preparing a suite of background documents to set out the evidence that the Minerals Local Plan will be based on and to flag up the key issues.

These documents will be quite detailed and will inevitably be more technical. If you think you have the expertise to help us out, please have a look at the background documents we have prepared so far. These are available at www.worcestershire.gov.uk/mineralsbackground and cover the following key issues so far:

Key issue:
What minerals are found in Worcestershire?

- *New* Background Document: Analysis of Mineral Resources in Worcestershire - If you have any additional information on sites or resources then please respond to this document.
- Background Document: Coal in Worcestershire
- Background Document: Salt and Brine in Worcestershire
- Background Document: Clay in Worcestershire
- Background Document: Building Stone in Worcestershire

Key issue:
How much of each mineral do we need to make provision for?

- *New* The Local Aggregates Assessment for Worcestershire - June 2013
- The Draft Local Aggregates Assessment for Worcestershire - October 2012
- Background Document: Ensuring adequate and steady supply of industrial and energy minerals

We expect to prepare more background documents over the coming months. We will be producing documents on sand and gravel and silica sand in the county. We will also write separate background documents on any important economic or environmental issues that we identify. When they are ready these documents will be put on our website.

Key issue:
How the Minerals Local Plan will be appraised against sustainability, habitats and equality considerations?

- Sustainability Appraisal: A Scoping Report was prepared and was consulted on alongside the first stage consultation on the Minerals Local Plan.
- *New* Initial Sustainability Appraisal - prepared and consulted on alongside this stage of consultation on the Minerals Local Plan
- *New* Habitats Regulations Assessment Scoping Report
- Equality Impact Assessment Desktop Screening

Key issue:
What are the other local issues?

- Background Document: Contributing towards Worcestershire's priorities
- *New* Background Document: Climate Change
- Background Document: The Malvern Hills Acts
- *New* Profile documents for Environmental Character Areas: These detail the mineral and environmental context in the Environmental Character Areas which form the basis for the Worcestershire Green Infrastructure Framework. There are 30 Environmental Character Areas.

Let us know you are interested...

If you don't want to respond to this consultation but would like to be kept up to date with how future work on the Minerals Local Plan is progressing you can register on our planning consultation database: http://www.worcestershire.gov.uk/researchweb/planning/involved.htm. If you were sent this consultation directly there is no need to register again.

The main stages in the development of the Minerals Local Plan are outlined in Figure 1. Consultation is integral to this process.

Figure 1. Main stages in the preparation of the Minerals Local Plan

At previous stages:

Autumn-Winter 2012

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

At this stage:

Autumn – Winter 2013

You can help us to:

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

At later stages:

Summer 2014

You can help us by commenting on the draft policy framework. The wording will be sent out for consultation and you will be able to comment on both the issues considered and the drafting of the policies.

You can also comment on more detailed restoration priorities for each of the areas of search.

Winter 2014

You will have 6 weeks to tell us if you think that the Minerals Local Plan complies with national requirements and all of the right legislation.

Winter 2014 – Summer 2015

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

Winter 2015

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

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

Church Farm East sand and gravel working near Grimley

6. Portrait of Worcestershire

Context

6.1 The county of Worcestershire has a population of 566,600[2] and covers an area of 173,529ha. There are six District, City and Borough Councils in Worcestershire: Bromsgrove; Malvern Hills; Redditch; Worcester City; Wychavon and Wyre Forest.

Minerals

6.2 Worcestershire has a diverse geology. It is made up of a wide variety of rock types covering 600 million years of earth history.

6.3 In the west, the Malvern Hills run north-south along the county boundary and are largely formed from ancient Precambrian rocks. These are some of the oldest rocks in England and form one of the most important basement structures of southern Britain. In the north the county is bounded by the Clent Hills and Lickey Hills, which are formed from Carboniferous and Cambrian rock from the more recent Paleozoic era. Carboniferous formations are also found in the Wyre Forest Area in the form of red mudstone and coal.

6.4 Elsewhere in the county the broad floodplains of the Severn, the Teme Valley and Vale of Evesham are floored by easily eroded mudstones and sandstone of Devonian, Triassic and Jurassic age. In the east of the county, Jurassic mudstone is overlaid by Jurassic sandstones and limestones, which form the limestone escarpment of the Cotswolds.

6.5 Over the past 500,000 years ice sheets and melt water have covered the land surface, and the resulting sediments and alluvium deposited have formed terraces along the major river systems.

Building Stone[3]

6.6 There are examples of buildings across the county which have been constructed from local stone. This tends to be of poor quality, particularly sandstones found in the north west of the county and Cotswold limestone around Bredon Hill and Broadway, the exception is granite found in the Malvern area. Building stone is not currently worked in Worcestershire.

2 ONS mid-year estimate for 2011.

3 For the purpose of this document, the term "building stone" is intended to incorporate both building and roofing stones.

Aggregate minerals

Figure 2. Aggregate Minerals in Worcestershire

6.7 Between 2006 and 2010, 0.5-0.8 million tonnes of sand and gravel were produced each year in Worcestershire. There are currently 7 active sand and gravel workings in the county.

Glacial and terrace sand and gravel

6.8 Worcestershire has a history of sand and gravel working along the Severn and Carrant Brook Valleys. There have been no recent workings along the Carrant Brook, however working along the Severn Valley is currently ongoing at several sites.

Solid sand

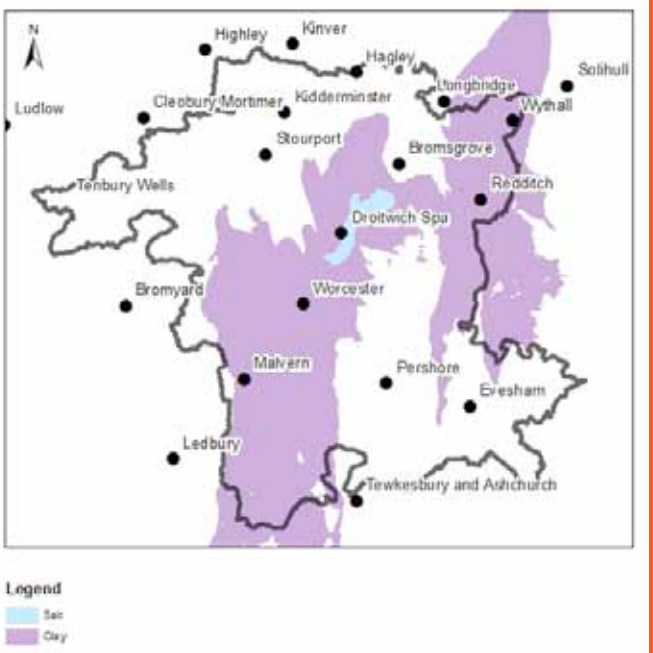
6.9 Away from the river valleys, sand and gravel has also been worked north of Bromsgrove in the Wildmoor and Blackwell areas, where moulding and silica sands were once nationally important for the iron founding industry. There are active workings in the Wildmoor area at present.

Crushed Rock

6.10 Crushed rock has been worked in the Abberley and Woodbury Hills, Malvern Hills and Fish Hill (near Broadway) over the last 50 years. However there are currently no workings or planning permissions for crushed rock in the county. Several private Acts of Parliament between 1884 and 1924 established the Malvern Hills Conservators and gave the body the responsibility to protect the beauty of the Malvern Hills from the 'threat' of quarrying. It is therefore unlikely that large scale mineral working will take place in the Malvern Hills in the future, although this is not specifically prevented by the Acts[4].

Industrial minerals

Figure 3. Industrial minerals in Worcestershire



Clay

6.11 Clay is widely found across the central area of the county and historically there have been many small-scale local workings. The only place that clay is currently worked in Worcestershire is at Hartlebury, near Kidderminster. There are two operational sites and two associated brick works which together are capable of producing over 2 million bricks per week, although they are not currently operating at full capacity.

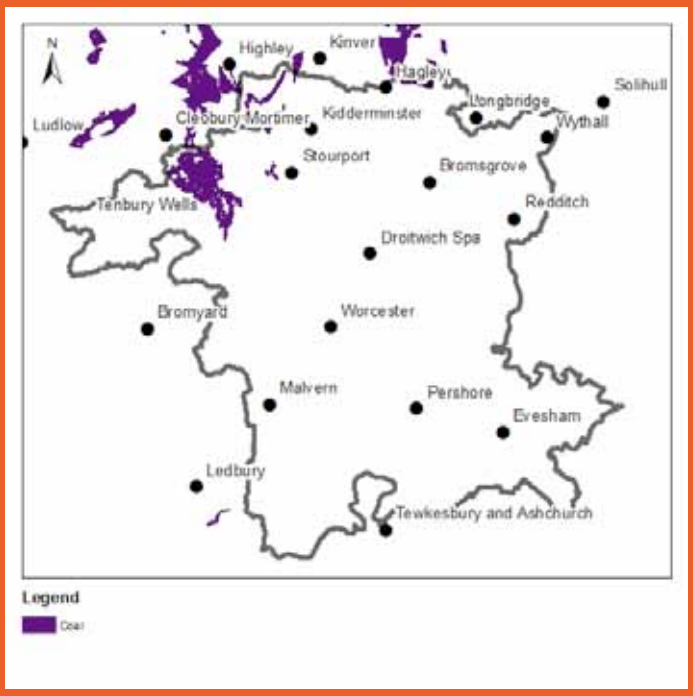
4 See Background Document: The Malvern Hills Acts

Salt and Brine

6.12 Salt deposits, which can be found in two areas in Worcestershire, Droitwich and Stoke Prior, were also worked until the 1920s and 1970's respectively. This involved pumping brine from the ground. The salt and brine resources in Worcestershire are not considered likely to be workable or commercially attractive in the future due to issues relating to ground stability and subsidence.

Energy minerals

Figure 4. Energy minerals in Worcestershire



Coal

6.13 Coalfields in Worcestershire are restricted to the north of the county, to the west of Kidderminster and just south of Stourbridge. These are part of larger coalfields that extend north of the county, but the area of workable coal in Worcestershire is relatively small. Coal has not been worked in Worcestershire since the 1970s and is unlikely to attract further interest.

Hydrocarbons

6.14 There is no history of "conventional" oil and gas, coalbed methane or unconventional hydrocarbons such as shale gas being worked in Worcestershire. Coal bearing and shale strata exist in the county, however there is no evidence to suggest that these contain unconventional hydrocarbons such as shale gas.

6.15 Based on current evidence[5] the county is not considered prospective for coalbed methane. One exploration well for oil and gas has been drilled in the county and another on the border Neither of these led to the discovery of oil or gas.

Secondary and recycled resources

6.16 Secondary aggregates are produced as by-products from other industrial processes. There are currently no industrial processes in Worcestershire which are known to produce secondary aggregates or any waste management facilities that are known to process them.

6.17 A significant amount of recycled aggregates are produced in the county from the management of construction and demolition waste (C&D waste). This could provide up to 420,000 tonnes of recycled aggregates per year[6].

Imports and exports

6.18 The information available indicates that Worcestershire is a net exporter of sand and gravel, however overall the county is a net importer of aggregate. Imports and exports are also commonplace for other minerals products, for example customers often choose bricks based on aesthetic qualities and there is therefore a national market. Worcestershire is a net exporter of bricks.

5 "Mineral Resource Information for Development Plans: Herefordshire and Worcestershire: Resources and Constraints." British Geological Survey 1999

6 See "Waste Core Strategy for Worcestershire" for further details.

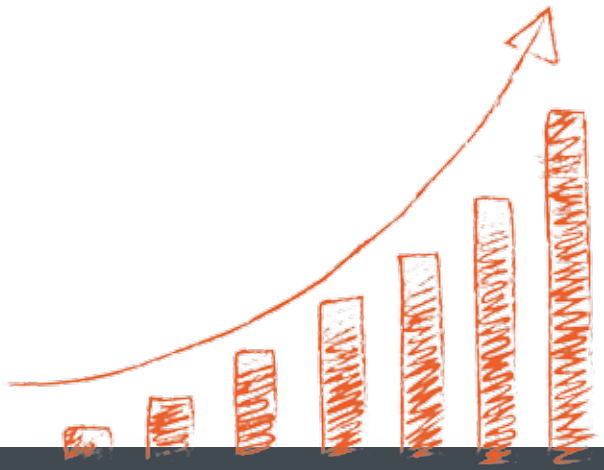
Environment

6.19 Worcestershire's landscape is one of the most diverse in Britain, with 22 significantly different rural landscape types. The Malvern Hills and Cotswolds Areas of Outstanding Natural Beauty are both partly within the county. Worcestershire 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 114 biological SSSIs and over 460 Local Wildlife Sites in the county. Worcestershire also has over a quarter of the UK's resource of unimproved neutral grassland habitat. The county also has a diverse and rich historic environment with over 29,000 heritage assets currently recorded on the county Historic Environment Record, 135 conservation areas, 6,300 listed buildings and 168 scheduled ancient monuments.

6.20 There are 13 geological SSSIs and more than 90 Local Geological Sites in Worcestershire. The Abberley and Malvern Hills Geopark which covers 1250 square kilometres, is partly in Worcestershire and extends into Gloucestershire, Herefordshire and Shropshire. Part of the 109 mile Geopark Way walking trail also runs through the county. The Malvern Hills and Cotswolds Areas of Outstanding Natural Beauty are both partly within the county and are also noted for their geology.

6.21 Worcestershire's natural and historic environment helps to define the county, providing a strong sense of place, attracting and retaining people and businesses and contributing a vast range of services which are sometimes overlooked. As a rural county, there are significant areas of green space. These areas do not exist in isolation, they are an integrated system of environmental stepping stones in a wider network.

6.22 Traditionally, the environmental value of these green spaces has been considered in isolation, however in Worcestershire there is support for taking a "Green Infrastructure" approach. This means integrating the consideration of economic, health and social objectives into the protection, planning and management of environmental assets. Flooding and climate change resilience are of particular concern in the county.



Economy

6.23 71% of the population of Worcestershire live in urban areas, principally Worcester, Redditch, Bromsgrove and Kidderminster. Future growth in Worcestershire is expected to maintain and reinforce the current distribution of population and employment with a focus in and around Worcester, Redditch and Kidderminster and some growth in Malvern, Droitwich Spa and Evesham. The development of over 25,500 new houses and over 250 ha of employment land is anticipated in Worcestershire in the next 14-18 years.[7] Significant development is also planned in other areas close to the county boundary. Minerals will be required to enable this growth.

6.24 Employment in Worcestershire is predominantly urban based, with the majority being service-based, however manufacturing, research and development, agriculture and food-related industries are locally important. As over 80% of Worcestershire is categorised as having high quality agricultural land, there is significant cross-over between the location of mineral resources and good quality land.

7 Estimated level of housing and employment land development based on information from WCC Strategic Planning team, March 2013. These estimates are likely to change as each of the City, Borough and District Councils in Worcestershire and the adjoining areas develop their Local Plans.

Transportation of sand and gravel on the River Severn

Transport

Water

6.25 The River Severn is navigable as far north as Stourport-on-Severn and is currently used to transport sand and gravel between Ryall and Ripple quarries in Worcestershire and into Gloucestershire. The River Avon is navigable from Tewkesbury to Stratford upon Avon and is capable of carrying commercial traffic. There is also an extensive canal network in the county, with the Worcester & Birmingham Canal, Staffordshire & Worcestershire Canal and Droitwich Canals. There are however some limitations on vessel size due to the locks on or between the waterways.

Rail

6.26 Strategic rail networks within Worcestershire have strong links to the north and south of the county, with all of the main towns being connected to the rail network. There are no major rail freight facilities in Worcestershire and limited opportunities for rail freight transport at present. The development of new railheads is likely to be challenging and would require the development of a sizeable mineral working to warrant the investment in new rail infrastructure.

Road

6.27 The county is well connected to the strategic road network with links to the M5, M42, and M50. Worcester, Droitwich Spa, Bromsgrove and Redditch are well placed on the motorway network and Kidderminster, Malvern and Evesham are also well served by A roads. However as mineral workings often take place in rural areas the quality and condition of local road links will also be a consideration.

Consultation Question

Q1. Do you think there are any other issues we should be aware of when preparing the Minerals Local Plan?

Retreat Farm sand and gravel working near Grimley

7. Vision and Objectives

In the previous consultation...

7.1 We said that the Minerals Local Plan priorities would be informed by other strategies. We listed:

- **Economic policies** and background evidence, including An Economic Strategy for Worcestershire.
- **Environmental policies** and background evidence, including the Worcestershire Partnership State of the Environment Report, The Water Framework Directive and Worcestershire's Biodiversity Action Plan priorities.
- **Community Strategies**, including The Single Sustainable Community Strategy for Worcestershire.
- **Cross-cutting policies** and background evidence, including the Local Transport Plan, City, Borough and District Local Plans and the Worcestershire Green Infrastructure Framework Documents.

We also asked you what else you thought we should consider.

You said...

7.2 You said we should also take account of:

National considerations

- The National Planning Policy Framework
- The Natural Environment and Rural Communities Act (2006)

Local considerations

- Cotswolds Area of Outstanding Natural Beauty Management Plan
- Birmingham and Black Country Nature Improvement Area
- The Worcestershire Green Infrastructure Strategy
- Severn River Basin Management Plan
- Geodiversity Action Plan
- The Strategic Stone Study Database
- Worcestershire Archaeology and Aggregate Resource Assessment
- Malvern Hills Acts
- Local Plans
- The local economy

Our approach now...

7.3 We have used this information to identify key issues. The issues listed in Figure 5 were either highlighted in the previous consultation, are key to the strategies identified above or are otherwise locally relevant.

7.4 These issues have informed the development of the draft vision and objectives for the Minerals Local Plan.

7.5 **The vision** sets out the Council's ambition for what mineral provision and restoration will 'look like' in the county in the next 15 years. **The objectives** outline high-level priorities for realising the vision.

7.6 The objectives will then be **delivered through the policy framework** in the Minerals Local Plan. This can be broadly thought of in terms of 'criteria-based' policies that apply to all proposals and area specific priorities which apply to the identified areas of search and opportunity area for clay. The relationship between these aspects is set out in Figure 6.

Figure 5. Issues identified

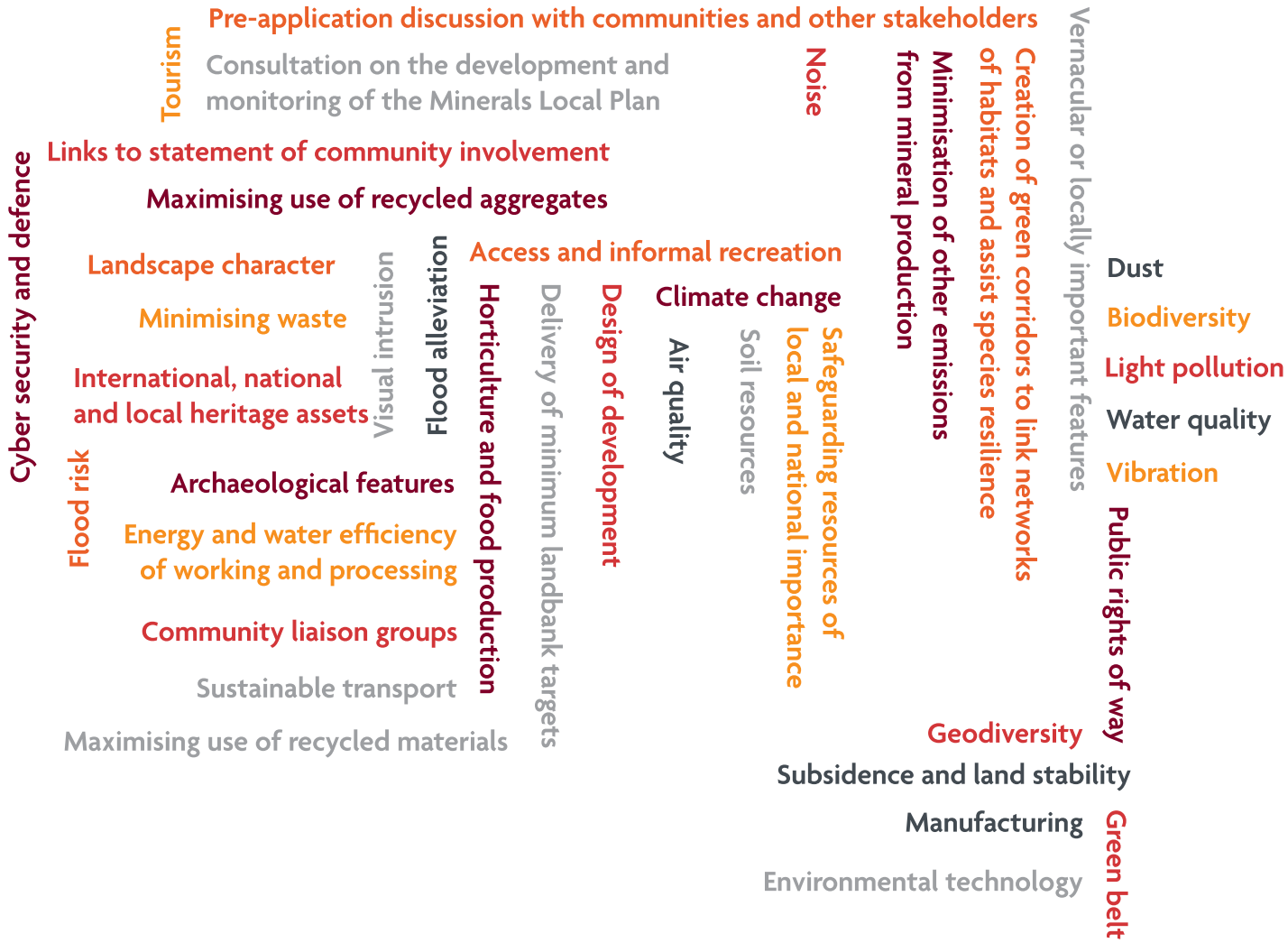


Figure 6. The relationship between the vision, the objectives and the policy framework

The detail...

Draft vision

7.7 The vision should give a **high-level overview** of the following issues:

- How much mineral resource will be worked in Worcestershire and broadly when this will take place;
- Where minerals should be extracted;
- How minerals sites should be worked;
- How minerals sites should be restored; and
- How and where minerals should be safeguarded for use in the future.

Each of these issues is then addressed in detail in the rest of the plan. This consultation document includes chapters addressing each of them in turn.

7.8 The vision should also be a high-level indication of how the Minerals Local Plan will deliver the requirements of the National Planning Policy Framework. These are[8]:

- **to contribute to the achievement of sustainable development:** Local Plans should include a presumption in favour of sustainable development.
- **to seek opportunities to achieve each of the economic, social and environmental dimensions of sustainable development:** Local Plans should deliver net gains across all three dimensions.
- **to set out the strategic priorities for the area:** Strategic priorities include the provision of minerals, ensuring adequate housing, employment and infrastructure provision, climate change mitigation and adaptation and conservation and enhancement of the natural and historic environment, including landscape.
- **to contain a clear strategy for enhancing the natural, built and historic environment**
- **to reflect the vision and aspirations of local communities**
- **to take an approach which is aspirational but realistic**

8 Paraphrased from the National Planning Policy Framework, paragraphs 151-157.

7.9 Taking all of this into account the following draft vision has been developed.

Draft Vision

The Minerals Local Plan will deliver sustainable minerals development in Worcestershire up to 2030 and beyond.

In order to support a sustainable economy and to maintain and foster local distinctiveness, mineral provision in Worcestershire will be adequate to contribute to national and local needs, enabling the contribution of at least 18.54 million tonnes of sand and gravel and 3.61 million tonnes of crushed rock to national supply, and enabling the provision of industrial and energy minerals and local building stone where appropriate. Annual requirements for minerals will be met and reserves replenished to ensure the delivery of minerals throughout the life of the plan and beyond. To enable sustainable supply in the long-term, reserves of aggregates will meet minimum landbank targets by halfway through the plan-period; nationally and locally important mineral resources will be safeguarded for future use; and the use of secondary and recycled materials will be encouraged.

Minerals will be worked and located in a socially and environmentally sustainable way that takes account of the health and amenity of local people, the vitality of the local economy, the integrity of the environment and the value of local features and characteristics. Mineral workings will be restored to maximise social, environmental and economic gains, through coordinated restoration that delivers networks of green infrastructure in an integrated way.

These economic, social and environmental achievements will be delivered through the Spatial Strategy (Figure 7) which drives development to the locations where the working of viable mineral resources will meet market demand and enable the delivery of the strategic restoration priorities identified.

Draft Spatial Strategy

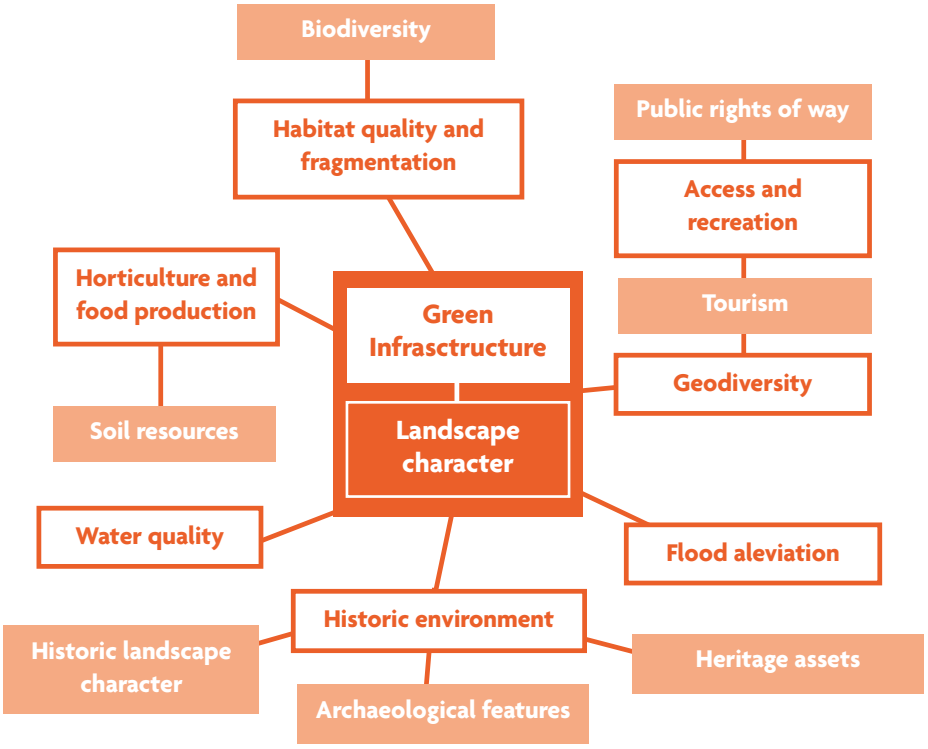
7.10 The role of the **Spatial Strategy** is to set out very broadly what type of development we would like where. This is an important aspect of the plan, giving a geographic dimension to the vision.

7.11 The Spatial Strategy (Figure 7) sets out:

- Areas of search for the working of:
  - Terrace and glacial sand and gravel;
  - Solid sands; and
  - Crushed rock

  (Details of how these have been developed are set out in Section 11)
- A potential opportunity area for the working of clay (Details of how this has been developed are set out in Section 11)
- Over-arching restoration priorities for sand and gravel and crushed rock corridors (Details of how these have been developed are set out in Section 12)

Figure 6a. High-level strategic restoration priorities



Strategic restoration priorities

7.12 The draft vision and objectives of the Minerals Local Plan and the relevant issues they should address have been used to identify eight high-level strategic restoration priorities (shown in bold on Figure 6a) and several relevant issues (shown in the shaded boxes) to be considered for each area of search, the opportunity area for clay and in developing the restoration priorities in the Spatial Strategy.

7.13 Although the fundamental principle of Green Infrastructure is that it should integrate a number of priorities and considerations, in order to give strategic direction in the Spatial Strategy we have identified corridors where there is a real opportunity to deliver the strategic restoration benefits rather than piece-meal restoration schemes. These are shown as over-arching restoration priorities on the spatial strategy diagram (Figure 7).

Figure 7. Spatial Strategy

Legend

- Terrace and Glacial sand and gravel area of search
- Solid Sand area of search
- Crushed Rock area of search
- Clay opportunity areas

Map features

- Rivers
- County boundary

Over-arching restoration priorities

- Habitat quality and fragmentation
- Horticulture and food production
- Water Quality
- Abberley and Malvern Hills Geopark
- Area of Outstanding Natural Beauty
- Special Area of Conservation (SAC)
- "Areas of Search" for informal recreation

Consultation Questions

Q2. Do you think that the vision successfully addresses the following broad issues?

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

b) **Where** minerals should be extracted;

c) **How minerals sites should be worked;**

d) **How minerals sites should be restored**

If not, please provide details of how you think the vision could be improved to address these points.

Q3. Do you think that the vision addresses the principles of the National Planning Policy Framework by:

a) **contributing to the achievement of sustainable development?**
Local Plans should include a presumption in favour of sustainable development.

b) **seeking opportunities to achieve each of the economic, social and environmental dimensions of sustainable development?**
Local plans should deliver net gains across all three dimensions.

c) **setting out the strategic priorities for the area?**
Strategic priorities include the provision of minerals, ensuring adequate housing, employment and infrastructure provision, climate change mitigation and adaptation and conservation and enhancement of the natural and historic environment, including landscape.

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

e) **reflecting the vision and aspirations of local communities?**

f) **taking an approach which is aspirational but realistic?**

If not, please give details of how you think the vision could be improved to address these points.

Q4. Do you have any other comments on the vision or spatial strategy?

Draft objectives

7.14 The objectives set out high-level priorities for the delivery of the vision. We think that the following objectives will deliver the vision. These are not listed in order of importance.

Draft Objectives

The following objectives will deliver sustainable minerals development in Worcestershire:

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

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

Draft objective 3
Protect and enhance Worcestershire's key economic sectors [9].

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

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

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

Draft objective 7
Protect and enhance health and amenity.

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

7.15 The objectives have been derived from the consideration of the issues and principles highlighted above. The relevant issues for each objective are outlined in Table 1 (below).

9 Worcestershire's key sectors are outlined in the Worcestershire Local Enterprise Partnership's Business Plan 2012 "The Outlook is Bright in Worcestershire".

Table 1. Issues and objectives

Draft objective	Relevant issues
1) Ensure adequate and steady supply of aggregate, industrial and energy minerals over the life of the plan.	• Delivery of minimum landbank targets • Maximising use of recycled aggregates
2) Ensure the long term sustainability of supply of minerals resources.	• Safeguarding resources of local and national importance • Maximising use of recycled aggregates
3) Protect and enhance Worcestershire's key economic sectors.	• Manufacturing • Cyber security and defence • Horticulture and food production • Environmental technology • Tourism
4) Ensure mineral operations are resilient to and mitigate the impacts of climate change.	• Sustainable transport • Energy and water efficiency of working and processing • Minimisation of other emissions from mineral production • Maximising use of recycled materials and minimisation of waste • Design of development • Flood risk • Subsidence and land stability
5) Utilise mineral restoration to enhance climate change resilience of the county.	• Habitat quality and fragmentation • Flood alleviation • Soil resources
6) Protect and enhance the natural and historic environment.	• Water quality and quantity • Geodiversity • Biodiversity • Landscape character • International, national and local heritage assets • Archaeological features • Vernacular or locally important features • Green Belt
7) Protect and enhance health and amenity.	• Air quality • Dust • Noise • Vibration and seismic instability • Visual intrusion • Light pollution • Safety • Public rights of way • Access and informal recreation
8) Involve all those affected as openly and effectively as possible.	• Pre-application discussion with communities and other stakeholders • Links to statement of community involvement • Community liaison groups • Consultation on the development and monitoring of the Minerals Local Plan

Fish Hill Quarry

Consultation Questions

We would like to know if you support the draft objectives and if you think they will deliver the vision.

Q5. Do you support the objectives?

Q6. Will the objectives deliver the vision?

Q7. Please give details of any other strategic issues that you think should be considered. Please refer to the relevant objective number in your answer.

Q8. Do you have any other comments on the objectives, or do you think there are any additional objectives which would help deliver the vision?

Using the Minerals Local Plan to deliver sustainable mineral development

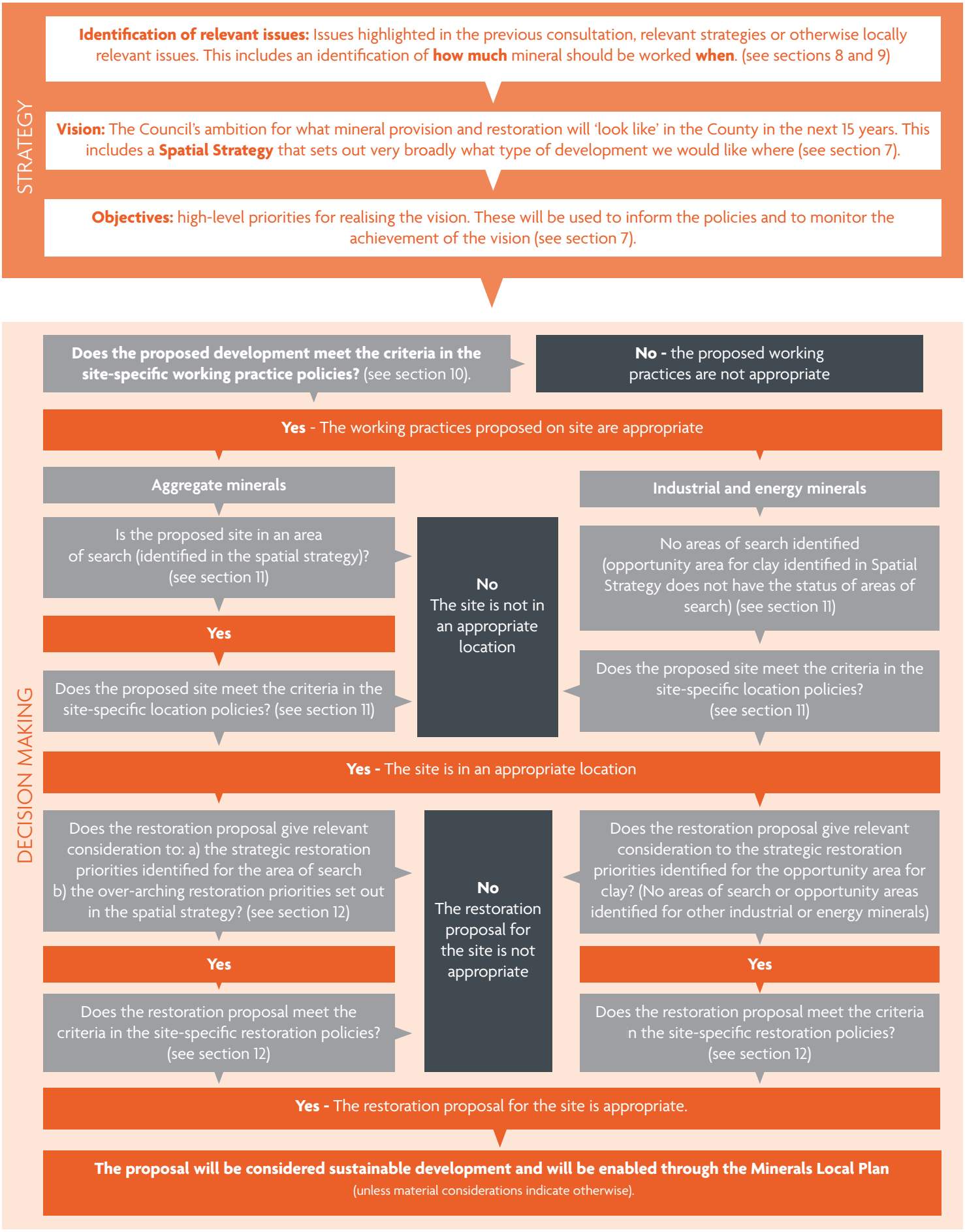
7.16 National policy[10] states that:

"Policies in Local Plans should follow the approach of the presumption in favour of sustainable development so that it is clear that development which is sustainable can be approved without delay. All plans should be based upon and reflect the presumption in favour of sustainable development, with clear policies that will guide how the presumption should be applied locally."

7.17 We intend to use the vision, objectives and spatial strategy to develop policies that will guide how the presumption in favour of sustainable development should be applied locally, as set out in Figure 8.

10 National Planning Policy Framework, paragraph 15.

Figure 8. Using the Minerals Local Plan to deliver sustainable mineral development



Note: When determining planning applications decisions must be made in accordance with the development plan unless material considerations indicate otherwise. Other policies in the development plan will therefore need to be considered to address other issues and it may be appropriate to take other material considerations into account.

Church Farm East sand and gravel working near Grimley

8. How much mineral resource will we make provision for?

In the previous consultation...

8.1 In the previous consultation we set out 5 alternative methods for calculating the amount of mineral resource that we need to make provision for over the life of the strategy. We said that we would make provision for a range between the highest and lowest of these alternatives, as shown in Table 2:

Table 2. Mineral provision requirements in Worcestershire as set out in the first stage consultation on the Minerals Local Plan

Aggregates	
Sand and gravel	18-35 million tonnes
Hard (crushed) rock	4-7 million tonnes
Secondary and recycled aggregates	5-7 million tonnes
Industrial Minerals	
Silica Sand	We've probably got permission for enough already
Clay	
Salt	We don't think resources are viable
Energy Minerals	
Coal	We don't think resources are viable

You said...

- Using a range was not a good idea because it would create uncertainty.
- The approach to working out demand for minerals should be based on the level of past sales.

In addition...

- New national guidance has been published[11] which gives more details about how requirements for the provision of aggregates should be calculated.

Our approach now...

8.2 We have refined our approach. To establish the minimum amount of aggregate we need to make provision for in the Minerals Local Plan we have calculated:

- The amount of aggregate that is needed to ensure that we have enough reserves to meet national 'landbank' targets; and
- The amount of aggregate that we will need to replenish these reserves every year.

11 Department for Communities and Local Government, October 2012, "Guidance on the Managed Aggregate Supply System" available on www.gov.uk

8.3 Alternative approaches are set out below, but this time we have identified minimum amounts, rather than using a range. The figures we have calculated using our preferred method have been incorporated directly into the draft vision, which says:

"In order to support a sustainable economy and to maintain and foster local distinctiveness, mineral provision in Worcestershire will be adequate to contribute to national and local needs, enabling the contribution of at least 18.54 million tonnes of sand and gravel and 3.61 million tonnes of crushed rock to national supply, and enabling the provision of industrial and energy minerals and local building stone where appropriate...."

8.4 You will note that we don't set out specific levels of provision for non aggregate minerals. This is either because there is already adequate provision for these minerals or because they are not considered viable in Worcestershire (further details are set out below). However the vision aims to enable all types of mineral development where it is appropriate.

8.5 The draft objectives are intended to support the delivery of the vision:

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

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

The detail...

Aggregates

8.6 8.6. When calculating the level of provision we need to make over the plan-period there are two main considerations:

- ensuring that annual provision is adequate; and
- ensuring that security of future supply is adequate.

8.7 Each of these aspects is addressed in turn below. Three alternative methods for calculating the level of provision in the Minerals Local Plan are then set out.

Annual provision

8.8 Our approach to calculating annual aggregate provision requirements is detailed in the Local Aggregate Assessment for Worcestershire, which has now been adopted by the Council. To summarise, we have chosen to use a two-phase method for calculating the provision required:

- **Up to and including 2016:** The West Midlands Mineral Planning Authorities agreed the level of provision to be made by each authority up to 2016. This sets out the share of national supply that each area of the West Midlands should provide and is based on the share of past sales for each area. These levels of provision do not extend beyond 2016.
- **Beyond 2016:** Provision requirements for the remainder of the plan period will be based on a rolling average of annual sales levels in Worcestershire in the last 10 years.

Up to and including 2016	2016	Beyond 2016
Required provision per annum Sand and gravel: **0.871** million tonnes Crushed rock: **0.163** million tonnes		Rolling average of annual sales in the last 10 years, currently: Sand and gravel: **0.764** million tonnes Crushed rock: **0.118** million tonnes However **this will be updated on an annual basis**.

8.9 This method combines and builds on some of the alternatives set out in the previous consultation. We consider that this approach is the option which most closely complies with the National Planning Policy Framework. Further detail regarding the compliance of this method with the National Planning Policy Framework, and detail of other alternatives considered is outlined in the Local Aggregate Assessment which is available on **www.worcestershire.gov.uk/amr**.

8.10 The method can be used to calculate the minimum cumulative level of provision that should be made in the Minerals Local Plan to ensure that annual supply would be adequate:

Table 3. Minimum level of provision in the Minerals Local Plan to maintain annual supply

	Cumulative total 2015 - 2016	Cumulative total 2017 - 2030
Sand and gravel	1.74 million tonnes	10.7 million tonnes
Crushed rock	0.33 million tonnes	1.65 million tonnes

Security of future supply

8.11 National policy[12] states that:

"Minerals planning authorities should plan for a steady and adequate supply of aggregates by:

- ...using landbanks of aggregate minerals reserves principally as an indicator of the security of aggregate minerals supply, and to indicate the additional provision that needs to be made for new aggregate extraction and alternative supplies in mineral plans;
- making provision for the maintenance of landbanks of at least 7 years for sand and gravel and at least 10 years for crushed rock, whilst ensuring that the capacity of operations to supply a wide range of materials is not compromised. Longer periods may be appropriate to take account of the need to supply a range of types of aggregates, locations of permitted reserves relative to markets, and productive capacity of permitted sites;..."

Jargon Buster

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.

8.12 If the landbank in Worcestershire was at or above these levels it would only be necessary to make provision to "maintain" this landbank. In these circumstances only the annual requirements would need to be taken into account when calculating the level of provision in the Minerals Local Plan. However the current landbank for sand and gravel in Worcestershire is below the level specified in national policy at 4.49 years. For crushed rock the last publicly available landbank figure was 3.31 years[13], however all crushed rock working in the county has now ceased with the last permitted site currently being restored.

8.13 As there is clearly a shortfall in Worcestershire's landbank in comparison to national policy we need to make some choices about how to deal with this in the Minerals Local Plan.

8.14 We have put forward 3 alternative approaches to addressing these issues when calculating provision requirements:

Option A: Assume there is no permitted landbank at the start of the plan period

This method would make provision for an additional 7 years sand and gravel supply and 10 years crushed rock supply.

The assumption that there is no permitted landbank at the start of the plan period (anticipated to be 2015) is likely to be true for crushed rock; there are currently no permitted reserves for crushed rock in Worcestershire and no current applications for future working. It is however less likely that this will be the case for sand and gravel.

It is anticipated that the plan will be adopted in approximately 2 years; it is therefore likely that some of the current landbank for sand and gravel will remain. In addition there are two applications for sand and gravel working in Worcestershire which could be determined during this time. The applications, at Strensham and Holdfast, would have a combined supply of 0.833 million tonnes if they were to be permitted. This equates to almost 1 year's supply based on current apportionment levels. However any future decisions are

12 National Planning Policy Framework, paragraph 145.

13 Sales data cannot be published where there are fewer than 3 operational sites in an area. The last time there were three operating quarries producing crushed rock producing quarries in Worcestershire was 2003.

Retreat Farm sand and gravel working near Grimley

uncertain and permitting these applications would not in any case bring the landbank up to the levels set out in national policy.

This approach is likely to be realistic for crushed rock and would avoid the risk of under-provision for sand and gravel.

Option B: Assume the shortfall in landbank continues at current (published) levels[14]

This method would make provision for an additional 2.5 years sand and gravel supply and 6.5 years crushed rock supply.

As outlined above, the assumption that there will continue to be only a 6.5 year shortfall in landbank for crushed rock is known to be untrue as extraction in the county has now ceased.

It is also likely that the shortfall in landbank for sand and gravel will increase before adoption:

- It is anticipated that the plan will be adopted in approximately 2 years. It is therefore likely that without additional reserves receiving planning permission the landbank will fall by approximately 2 years.
- There are two applications for sand and gravel working in Worcestershire which could be determined before the plan is adopted. The applications, at Strensham and Holdfast, would have a combined supply of 0.833 million tonnes if they were to be permitted. Even so this is only about 1 years supply based on current levels of demand.
- No formal pre-application meetings have been held for new minerals reserves and there is no indication from industry that they are intending to submit applications in the short-term. As such we cannot rely on any additional reserves coming forward at present.

There is a moderate risk of under-provision if this option is selected.

Option C: Assume there is no shortfall in landbank at the start of the plan period

This method would not make provision for any shortfall in landbank.

Given the evidence outlined above, it is not considered likely that there will be 7 years permitted reserves for sand and gravel and 10 years permitted reserves of crushed rock at the anticipated adoption date (2015). There is therefore a high risk of under-provision if this option is selected.

8.15 Our preferred option is Option A and this has been used as the basis for the vision and the starting point for the rest of this consultation document. However the alternatives and their implications have been set out in Figure 9 to inform your answers to the consultation question that follows (Q9).

14 Calculated based on difference between minimum landbank (7 years sand and gravel, 10 years crushed rock) and last known landbank as published in RAWP report (sand and gravel 2012 4.49 years and crushed rock 2003, 3.31 years).

Figure 9. Options for provision of aggregates over the plan-period

Step 1: Address the shortfall in landbank

Option A: Assume there is no permitted landbank at the start of the plan period

This method would make provision for:

- 7 years sand and gravel: 6.1 million tonnes
- 10 years crushed rock: 1.63 million tonnes

Option B: Assume the shortfall in landbank continues at current levels [15]

This method would make provision for:

- 2.5 years sand and gravel: 2.18 million tonnes
- 6.5 years crushed rock: 1.06 million tonnes

Option C: Assume there is no shortfall in landbank at the start of the plan period

This method would not make provision for any shortfall in landbank.

- 0 years sand and gravel: 0 tonnes
- 0 years crushed rock: 0 tonnes

Step 2: Maintain supply based on required provision from adoption in 2015 up to and including 2016
(these figures are the same for all 3 options)

Sand and gravel: 1.74 million tonnes

Crushed rock: 0.33 million tonnes

Step 3: Maintain supply based on required provision from 2017 to 2030 (end of plan period)
(these figures are the same for all 3 options)

The sales figures used to calculate this amount will be updated on an annual basis, however the current 10 years sales average has been used to estimate requirements from 2017 to 2030.

Sand and gravel: 10.7 million tonnes

Crushed rock: 1.65 million tonnes

Step 4: Calculate overall provision to be made over the plan period

	Option A	Option B	Option C
Sand and gravel	18.54 million tonnes	14.62 million tonnes	12.44 million tonnes
Crushed rock	3.61 million tonnes	3.04 million tonnes	1.98 million tonnes

15 Calculated based on difference between minimum landbank (7 years sand and gravel, 10 years crushed rock) and last known landbank as published in WCC AMR and WMRAWP report (sand and gravel 2012 4.49 years and crushed rock 2003, 3.31 years).

Consultation Questions

Q9. Do you agree with Option A being the preferred option and the basis for the vision?

Q10. If you think there are other options which we should consider please provide details.

Industrial and energy minerals

8.16 We do not intend to identify milestones for the provision of non-aggregate minerals for the following reasons:

- **Building stone**
  We don't have any evidence on the viability of the resources but we will develop policies to assess individual applications;
- **Clay**
  There is currently a 37 year landbank for clay in Worcestershire. The National Planning Policy Framework does not set out a requirement for provision to be made by planning policy. We think that as this landbank extends more than 10 years beyond the plan-period it is not necessary to set provision milestones. However, in order not to stifle competition and long-term sustainability of supply we will develop policies to assess individual applications;
- **Coal**
  We don't think the resources are viable but we will develop policies to assess individual applications;
- **Hydrocarbons: conventional (oil and gas) and unconventional (shale gas) hydrocarbons**
  We don't think the resources are viable, but pending national policy guidance we will develop policies to assess individual applications;
- **Salt and brine**
  We don't think the resources are viable but we will develop policies to assess individual applications;
- **Silica sand**
  We don't have any evidence for setting a required level of provision for this mineral and we will develop policies to assess individual applications;
- **Secondary and recycled aggregates**
  Provision is addressed through the Waste Core Strategy and is monitored through the Annual Monitoring Report under the Waste Core Strategy monitoring indicators. This strategy seeks to achieve enough capacity to recycle 75% of construction and demolition waste.

8.17 Further details are set out in the evidence base available on www.worcestershire.gov.uk/mineralsbackground, particularly "Ensuring adequate and steady supply of industrial and energy minerals".

Consultation Questions

Q11. Do you agree with the approach to each of the industrial and energy minerals considered?

Q12. If you think there are other minerals which we should consider please provide details.

Sorted stockpiles of sand and gravel

9. When will minerals be worked and when will our reserves meet national targets?

In the previous consultation...

9.1 We have not previously asked you about any issues relating to the timing of supply.

Our approach now...

9.2 As set out in Section 8, we have established the minimum amount of aggregate we need to make provision for in the Minerals Local Plan. The vision clearly identifies this as:

"... enabling the contribution of at least 18.54 million tonnes of sand and gravel and 3.61 million tonnes of crushed rock to national supply, and enabling the provision of industrial and energy minerals and local building stone where appropriate."

9.3 For aggregates this level of provision is made up of two components:

- **The amount of aggregate reserves required to meet national targets:** We know that we currently do not have enough reserves to meet minimum targets set in the National Planning Policy Framework, so we need to find the best approach to building these reserves up during the plan-period.

This would mean having planning permission for reserves of at least:

- Sand and gravel: 6.1 million tonnes (7 year landbank)
- Crushed rock: 1.63 million tonnes (10 years landbank)

In this section we have considered the alternatives and think that it is most realistic to aim for achieving these levels of reserves by halfway through the plan-period and then seek to maintain or increase them over the rest of the plan period and beyond.

- **The amount of aggregate that we will need to replenish these reserves every year:** We estimate (see Section 8) that to replenish reserves we need to make the following annual provision:

	2015 - 2016	2017 - 2030
Sand and gravel	0.871 million tonnes	0.764 million tonnes
Crushed rock	0.163 million tonnes	0.118 million tonnes

We will seek to deliver these annual levels consistently during the plan-period, whilst also ensuring that we build up enough reserves to meet the land-bank requirements.

9.4 As well as identifying overall levels of supply, the vision sets out the timescales for building up adequate reserves to meet national targets:

"Annual requirements for minerals will be met and reserves replenished to ensure the delivery of minerals throughout the life of the plan and beyond. To enable sustainable supply in the long-term, reserves of aggregates will meet minimum landbank targets by halfway through the plan-period; nationally and locally important mineral resources will be safeguarded for future use; and the use of secondary and recycled materials will be encouraged."

The detail...

Aggregate minerals

The amount of aggregate reserves required to meet national targets

9.5 National policy[16] requires mineral planning authorities to maintain a minimum landbank of reserves for aggregates at the following levels:

- Sand and Gravel: 7 years
- Crushed rock: 10 years

9.6 The current landbank for sand and gravel in Worcestershire is below this level at **4.49 years**. For crushed rock the last publicly available landbank figure was **3.31 years**[17], however all crushed rock working in the county has now ceased with the last permitted site currently being restored.

9.7 As set out in the previous section, we propose to develop the Minerals Local Plan based on the assumption that there will be no landbank of reserves for aggregates when the plan is adopted and to make provision for meeting these landbank targets when calculating the overall level of provision required.

9.8 The vision and objectives of the new Minerals Local Plan seek to enable sustainable development by identifying preferred locations for aggregate extraction, called "areas of search". In this consultation document the areas of search are made up of resource areas covering approximately 14,500 hectares of land, which contain over 10 billion tonnes of estimated resource[18]. This will represent a step-change in minerals planning policy in the county. The current Minerals Local Plan is dated and only three preferred areas in Worcestershire remain unworked[19], one of which is proven to have no viable sand and gravel deposits. It is therefore anticipated that the policy framework set by the new Minerals Local Plan will provide an impetus for minerals development in Worcestershire.

9.9 However we still need to set milestones to achieve the landbank targets and trigger further action if greater impetus is needed:

Option A:
Aim for permitted reserves that will provide a minimum 7 year landbank for sand and gravel and 10 year landbank for crushed rock throughout the plan period

This is unlikely to be deliverable as we anticipate that the landbank will be below these levels at adoption and any planning applications resulting from the impetus of the new Minerals Local Plan will take time to determine.

Option B:
Aim for permitted reserves that will provide a minimum 7 year landbank for sand and gravel and 10 year landbank for crushed rock by halfway through the plan period

This could be deliverable through the Minerals Local Plan as it could be achieved by the granting of planning permission for:

- Sand and Gravel: less than 5% of the terrace and glacial sand and gravel resource identified in the areas of search/spatial strategy or less than 1% of the total sand and gravel resource identified in the areas of search/spatial strategy (terrace and glacial sand and gravel and solid sands)
- Crushed rock: less than 1% of the crushed rock mineral resource identified in the areas of search/spatial strategy

It is likely that planning applications resulting from the impetus of the new Minerals Local Plan could be determined and implemented within this time-frame.

16 National Planning Policy Framework, paragraph 145

17 Based on the Analysis of Mineral Resources in Worcestershire available on www.worcestershire.gov.uk/mineralsbackground, the estimated resource is 10,026,743,000 tonnes

18 Based on the Analysis of Mineral Resources in Worcestershire available on www.worcestershire.gov.uk/mineralsbackground this is estimated to be 10,026,743,000 tonnes.

19 Strensham (currently the subject of a planning application), Ryall North and Aston Mill, Aston Mill has been shown to be barren.

However as there are not currently any permitted reserves for crushed rock this could present a risk to the delivery of annual provision targets at the beginning of the plan-period.

It would be appropriate to monitor progress towards achieving this target and to identify a trigger point should further impetus be required. This might include monitoring progress annually in the first five years and considering the preparation of site specific planning policies if it looks unlikely that the targets will be met by halfway through the plan period.

Option C:
Aim for permitted reserves that will provide a minimum 7 year landbank for sand and gravel and 10 year landbank for crushed rock by the end of the plan period

This option is likely to be the most deliverable, however there is a national policy imperative to meet these targets and this is unlikely to be the most timely option.

It would be appropriate to monitor progress towards achieving this target and to identify a trigger point should further impetus be required. This might include monitoring progress annually in the first half of the plan period and considering the preparation of site specific planning policies if it looks unlikely that the targets will be met by the end of the plan period.

9.10 Our preferred option is Option B as it is considered to achieve the best balance between an ambitious and a deliverable approach. Option B has been used as the basis for the vision and the starting point for the rest of this consultation document.

Consultation Questions

Q13. Do you agree with Option B being the preferred option and the basis for the vision?

Q14. If you think there are other options which we should consider please provide details.

The amount of aggregate that we will need to replenish these reserves every year

9.11 We estimate (see Section 8) that to replenish reserves we need to make the following annual provision:

	2015 - 2016	2017 - 2030
Sand and gravel	0.871 million tonnes	0.764 million tonnes
Crushed rock	0.163 million tonnes	0.118 million tonnes

9.12 We will seek to deliver these annual levels consistently during the plan-period, whilst also ensuring that we build up enough reserves to meet the land-bank requirements. We think that this approach complies with national policy.

Consultation Question

Q15. Do you agree with this approach?

Industrial and energy minerals

9.13 There is no projected demand for industrial or energy minerals. The issue of phasing provision across the life of the Minerals Local Plan is not considered relevant, but the policy framework will enable applications to be considered when they come forward.

Consultation Question

Q16. Do you agree with this approach?

Machinery at Church Farm East sand and gravel working near Grimley

10. How will minerals be worked?

In the previous consultation...

10.1 **We said:**
"A mineral "working" or site has different impacts through its life. These vary through the operational and restoration stages and need to be considered right from the start of designing the development all the way through to looking after the site once it has been restored.

We will develop the Minerals Local Plan to address:

- The environment – including habitats, species, landscape, archaeology, historic environment, surface and ground water
- Transport – including site access and methods for transporting materials including road, rail, water, conveyors and pipelines
- Impacts on those nearby – including noise, dust, vibrations, visual impacts."

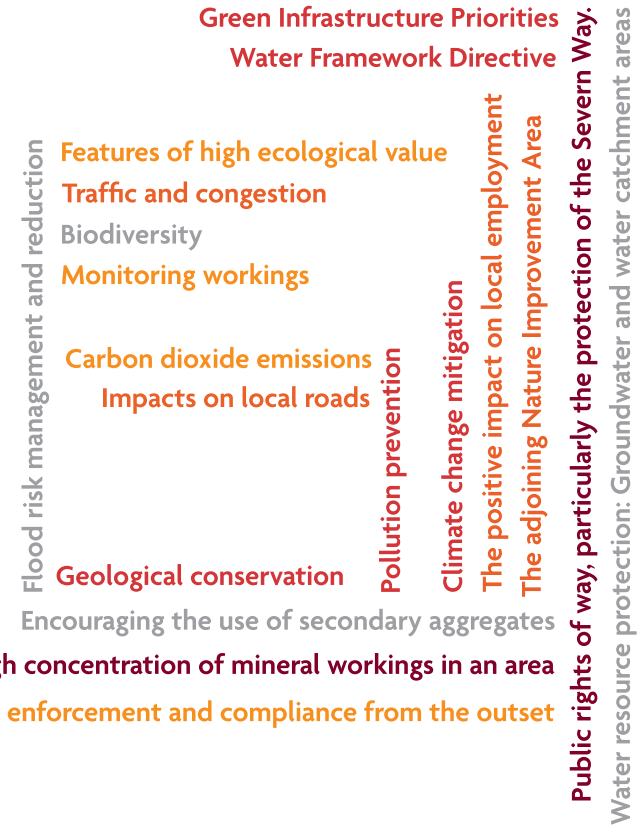
10.2 We asked you if there are any other issues we should consider and whether you are aware of any information that would help us to develop these policies.

You said...

10.3 You agreed that:

- The issues we outlined were appropriate
- Sustainable transport should be considered, but greater definition is needed.
- The natural and historic environment are important considerations.

10.4 You also said we should think about:



10.5 You drew our attention to the following additional information/guidance:

- Archaeology and Aggregates in Worcestershire – A Resource Assessment[20]
- Mineral Extraction and Archaeology practice guide[21]
- Data held at the Geological Records Centre[22]
- Geodiversity Action Plan for Worcestershire[23]
- The England Biodiversity Strategy[24]
- The Natural Environment White Paper[25]
- The Lawton Review: " Making Space for Nature: A review of England's Wildlife Sites and Ecological Network "[26]
- RSPB report: 'Nature After Minerals: how mineral site restoration can benefit people and wildlife'[27]
- The Worcestershire Biodiversity Action Plans[28]
- The Worcestershire Biodiversity Delivery Areas documents, which set out the biodiversity priorities for Worcestershire[29].
- Worcestershire Wildlife Trust's 'Living Landscape'[30]

20 Prepared by Worcestershire County Council

21 http://www.english-heritage.org.uk/publications/mineral-extraction-and-archaeology/

22 http://www.earthheritagetrust.org/pub/about-the-trust/grc/the-geological-records-centre/

23 http://www.earthheritagetrust.org/pub/local-gaps/the-local-geodiversity-action-plans/

24 http://www.defra.gov.uk/publications/2011/08/19/pb13583-biodiversity-strategy-2020/

25 http://www.defra.gov.uk/environment/natural/whitepaper/

26 http://archive.defra.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf

27 http://www.rspb.org.uk/Images/natureafterminerals report_tcm9-257075.pdf

28 http://www.worcestershire.gov.uk/cms/biodiversity/actionplans.aspx

29 http://www.worcestershire.gov.uk/cms/biodiversity/landscape-scale-conservation.aspx#Delivery

30 http://www.worcswildlifetrust.co.uk/your-livinglandscape.

Our approach now...

10.6 The working phase of a minerals site can include different activities. Each of these can result in impacts that need to be managed to ensure that they are acceptable. Broadly speaking these activities relate to three main aspects:

- **The "winning" of the mineral:** Sand and gravel and clay can be won by digging the material out of the ground in open pits. In some cases these pits are naturally dry or are pumped to remove any water ("dry" working). Where open pits are below the water table a dragline can be used to strip the mineral underwater rather than pumping the pit dry ("wet" working). Crushed rock is always worked dry.

  Other methods include blasting quarry faces through controlled explosions, as is sometimes the case for crushed rock production. Underground mining may also take place but is not likely in Worcestershire. Boreholes can be used to reach some types of minerals which can be extracted by pumping, and historically this method has been used in the county to extract brine.

- **The processing of the material:** This commonly includes washing, screening (or sorting), and crushing the mineral. It can include added-value processes ranging from simple bagging or batching of products to more sophisticated activities that require significant investment in equipment to produce an end-product, such as the manufacture of bricks, or the production of asphalt or cement products. Some processing activities can result in by-products which need to be managed. Settlement ponds to deal with the silt washed off sand and gravel are common.

- **Moving and storing the mineral:** Once they have been worked it may be necessary to store minerals ready for market or further processing. Stockpiles are therefore not uncommon. In addition minerals need to be moved around the site from the area where they are won to the processing or loading facilities. There are a number of methods for doing this, but private haul roads for site plant and conveyors are the most common in Worcestershire.

10.7 The policies in the Minerals Local Plan will need to address the impacts that these different aspects of working can have. They also need to be flexible enough to apply to different types of mineral workings, because impacts will vary depending on the type of mineral being worked, the methods used and the scale of the working.

10.8 The vision says:
"Minerals will be worked and located in a socially and environmentally sustainable way that takes account of the health and amenity of local people, the vitality of the local economy, the integrity of the environment and the value of local features and characteristics."

10.9 We intend to deliver the objectives shown in Table 4 through policies that address how mineral working should take place. The issues for working practices that the policies might consider are also highlighted in Table 4.

Table 4. How the draft objectives will be delivered through site-specific criteria-based policies relating to working practices

Draft objective	How the objective will be considered through working practice criteria policies to apply to individual proposals on a site by site basis
2) Ensure the long term sustainability of supply of minerals resources.	• Safeguarding resources of local and national importance • Maximising use of recycled aggregates
3) Protect and enhance Worcestershire's key economic sectors.	• Manufacturing • Cyber security and defence • Horticulture and food production • Environmental technology • Tourism
4) Ensure mineral operations are resilient to and mitigate the impacts of climate change.	• Sustainable transport • Energy and water efficiency of working and processing • Minimisation of other emissions from mineral production • Maximising use of recycled materials and minimisation of waste • Design of development • Flood risk • Subsidence and land stability
5) Utilise mineral restoration to enhance climate change resilience of the county.	• Habitat quality and fragmentation • Flood alleviation • Soil resources
6) Protect and enhance the natural and historic environment.	• Water quality and quantity • Geodiversity • Biodiversity • Landscape character • International, national and local heritage assets • Archaeological features • Green Belt
7) Protect and enhance health and amenity.	• Air quality • Dust • Noise • Vibration and seismic instability • Visual intrusion • Light pollution • Safety • Public rights of way • Access and informal recreation
8) Involve all those affected as openly and effectively as possible.	• Pre-application discussion with communities and other stakeholders • Links to statement of community involvement • Community liaison groups

Fish Hill Quarry

The detail...

10.10 National policy states that:

"In preparing Local Plans, local planning authorities should...

- set out environmental criteria, in line with the policies in this Framework, against which planning applications will be assessed so as to ensure that permitted operations do not have unacceptable adverse impacts on the natural and historic environment or human health, including from noise, dust, visual intrusion, traffic, tip- and quarry-slope stability, differential settlement of quarry backfill, mining subsidence, increased flood risk, impacts on the flow and quantity of surface and groundwater and migration of contamination from the site; and take into account the cumulative effects of multiple impacts from individual sites and/or a number of sites in a locality;
- when developing noise limits, recognise that some noisy short-term activities, which may otherwise be regarded as unacceptable, are unavoidable to facilitate minerals extraction... "[31]

"When determining planning applications, local planning authorities should:...

- ensure, in granting planning permission for mineral development, that there are no unacceptable adverse impacts on the natural and historic environment, human health or aviation safety, and take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality;
- ensure that any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source,[32] and establish appropriate noise limits for extraction in proximity to noise sensitive properties;..." [33]

10.11 Addressing these issues through the policy framework will be an essential part of our approach to enabling sustainable development.

10.12 We propose to enable new mineral development in the broad areas identified in the Spatial Strategy (see Section 7) where it is demonstrated that all of the issues outlined in Table 5 relating to working practices have been adequately addressed. These policies will need to look at the impacts of the proposed development itself and any cumulative effects it might have in combination with other development in the area. This will be particularly important if there is a concentration of mineral operations in the locality.

Consultation Question

Q.17 Do you support the policy issues identified? Please give details of any additional considerations which should inform any of these topics.

Q18. If you think that there are other issues that we should consider relating to how minerals are worked, please provide details.

31 National Planning Policy Framework, paragraph 143

32 Technical guidance on minerals published alongside this Framework sets out how these policies should be implemented.

33 National Planning Policy Framework, paragraph 144

Table 5. Issues to be addressed through policy criteria: How will minerals be worked?

Sustainable supply of mineral resources:
a. Recycled and secondary aggregates – any policies would need to maximise the use of recycled and secondary aggregates and refer to the issues addressed in the Waste Core Strategy. Provisions might include enabling waste management facilities associated with operational mineral workings, but would need to highlight the temporary nature of these types of facilities.
b. Maximising resource potential – this could enable the integration of added value processing plants where this will help to maximise the potential of resources or minimise waste. Again we would need to highlight that these would be limited to the life of the quarry. As their impacts can differ from other aspects of working different considerations might need to be taken into account. It may also be relevant to consider the phasing and restoration of sites to ensure that activities on one site will not needlessly sterilise adjacent or nearby resources.
Impacts on health, amenity and Worcestershire's key economic sectors:
c. Noise and vibration – impacts could be managed through controlling working practices, phasing and site management to aid noise attenuation, controlling when some operations will be permitted and limiting the days and hours of working or imposing noise and vibration limits. Specific consideration will be needed where blasting is proposed. Such considerations would also need to apply to seismic and other surveys.
d. Air quality and dust – impacts could be managed through working practices such as the use of sprinkler systems to damp down haul roads and stockpiles, sheeting of vehicles or wheel washing facilities and imposing dust limits. Consideration may also need to be given to any Air Quality Management Areas in or around the county.
e. Visual intrusion – impacts could be managed through site design and working practices, for example the phasing of operations, controlling stockpile heights or screening the site through planting, fencing or bunds.
f. Light pollution – impacts could be managed through site design and working practices, for example controlling lighting levels, directional lighting or controlling working hours.
g. Odour – impacts could be managed through working practices including appropriate storage of chemicals and oils and appropriate management of water storage and drainage systems.
h. Public rights of way – protecting current routes, re-routing existing rights of way or exploring opportunities to add to the existing network can all be options for maintaining and improving the public rights of way network.
i. Amenity along transport routes – several of the issues mentioned in this section can result in impacts along transport routes as well as in proximity to the mineral working. Impacts should therefore be considered where they result from transport to, from and around the site.

Transport:

j. Sustainable transportation – the merits of road, rail, water or other alternative modes of transport will be a consideration. The issues will be very site specific.

k. Safety of or congestion on transport routes – it is important to consider vehicular and pedestrian safety and access to, from and around the site, impacts on surrounding transport networks, including freight terminals or wharfage. Travel plans and routing agreements may be methods for managing this.

Sustainable design and operation:

l. Water efficiency of working and processing – some processes can be water resource intensive. Efficiency could be improved through promoting a reduction in water demand and maximising water re-use and the use of "grey" water.

m. Energy efficiency of working and processing - some processes can be energy intensive. Efficiency could be improved through promoting energy efficiency in the design and operation of any buildings and plant associated with the mineral working. There is potential to deliver between 10% and 46% reductions in energy demand across different areas of the aggregates sector if all sites operated at current levels of 'good practice'. [34]

n. Use of renewable and low carbon energy – this would need to acknowledge that the minerals sector is a significant energy consumer, with the minerals industry account for 10% of all industrial energy consumption in 2011 [35]. However, with the majority of this being consumed as gas and fuel oils, targets that set a % contribution of renewable energy may be harder to implement than in situations where electricity forms a larger part of the energy mix.[36]

o. Generation of renewable and low carbon energy – in many cases mineral workings are short-term operations that involve only temporary buildings. In these instances potential for energy generation may be limited to roof mounted photovoltaic panels or similar.

There is greater potential for renewable energy generation where operations are long-term in nature and will be in place long enough to make grid connections for energy export viable. This is likely to include added-value processing plant. In these circumstances the potential for renewable energy generation would be similar to that in any other industrial development. [37]

p. Flood risk – national policy [38] identifies sand and gravel workings as *water-compatible* development and other minerals and working processes as *less vulnerable*. However all proposals would still need to consider impacts both on and off site, and ensuring site safety during flooding events.

Policies could address the design of operations, including the use of flood resilient construction for site buildings, storage of waste and chemicals outside of the areas of highest risk and minimising risk from plant equipment through making sure it can either be moved out of areas of risk or is secure. Phasing of extraction may also be a consideration in minimising the risk of the workforce being cut off by rising water.

34 See Worcestershire County Council "Minerals and Climate Change Background Document" available on www.worcestershire.gov.uk/mineralsbackground for further details.

35 http://www.decc.gov.uk/en/content/cms/statistics/publications/ecuk/ecuk.aspx

36 See Worcestershire County Council "Minerals and Climate Change Background Document" available on www.worcestershire.gov.uk/mineralsbackground for further details.

37 See Worcestershire County Council "Minerals and Climate Change Background Document" available on www.worcestershire.gov.uk/mineralsbackground for further details.

38 Technical Guidance to the National Planning Policy Framework, March 2012.

q. Soil resources – working minerals often involves removing soils from the surface. Policies could be developed to consider stripping, storing and handling soils with the aim of maintaining their quality. This would be particularly important where the working is in an area of high quality agricultural land. It may be appropriate to require soils to be retained on site for restoration and phasing of operations could be a consideration.

r. Land stability and subsidence – this might address slope stability, settlement, quarry backfill, mining subsidence and seismic vibration. Specific consideration will be needed where blasting is proposed.

s. Green belt – national policy identifies mineral extraction as "not inappropriate" in Green Belt provided it preserves the openness of the Green Belt and does not conflict with the purposes of including land in Green Belt. Policies could be developed to ensure that working a mineral site would not conflict with national policy on green belt. Consideration might be given to aspects such as site layout, haul roads and stockpiles.

Natural and historic environment:

t. Ground and surface water resources – protection needs to be given to these resources. Considerations would relate to abstraction or dewatering, impacts on the water table, settlement and discharge, pollution and contamination (including during exploratory workings and flooding events).This could include consideration of source protection zones and potential impacts on the quality and quantity of water resources.

u. Geodiversity – mineral workings have the potential to expose or destroy geological and geomorphological features. Consideration should be given to the protection of geological Sites of Special Scientific Interest and Local Geological Sites. Consideration could also be given to the potential to protect or record geological features if they are uncovered during extraction.

v. European sites of nature conservation importance [39] – it is a legal requirement that protection is given to these sites. The impact mineral working could have on these sites needs to be considered, both on its own and in combination with other activities. Policies will need to be developed in line with these requirements.

w. Internationally identified habitats and species – it is a legal requirement that protection needs to be given to these assets. Policies will need to be developed in line with these requirements.

x. Nationally identified habitats, species and nature conservation sites – these include Sites of Special Scientific Interest, National Nature Reserves and Ancient Semi-Natural Woodland. National policy encourages a high level of protection to be given to these features.

y. Locally identified habitats, species and nature conservation sites – these include local wildlife sites, local nature reserves and priority habitats identified in the local Biodiversity Action Plans and networks of and links between these. National policy encourages the protection of these features. The potential impacts on any Nature Improvement Areas could also be considered.

z. Heritage assets and their settings – this should include the consideration of harm to World Heritage Sites, Scheduled and unscheduled Ancient Monuments, Listed Buildings, Conservation Areas, and assets recorded on the Historic Environment Record. It could also consider the potential to improve the understanding of the significance of historic assets and their settings.

39 The National Planning Policy Framework, paragraph 119, states that "The presumption in favour of sustainable development (paragraph 14) does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined". A Habitats Regulations Assessment is being developed alongside the emerging Minerals Local Plan and this will be taken into account as policies are developed.

aa. Archaeology – due to their scale and nature, mineral workings can have a unique impact on archaeological features. Policies would address the potential to protect or record archaeological features, including opportunities to improve the understanding of the archaeological potential of an area.

bb. Landscape – the consideration of landscape character will be an important factor in this issue. Designations such as Areas of Outstanding Natural Beauty will also have an influence on working practices and site design.

Open and effective engagement:

cc. Pre-application discussion – this will be encouraged at an early stage to give communities and other stakeholders the opportunity to raise relevant issues and influence the development of the proposal.

dd. Community liaison groups – these will be encouraged throughout the site's development, restoration and aftercare to facilitate effective two-way communication.

10.13 It should be noted that we do not intend to develop policies that set out minimum distances of workings from sensitive receptors, including properties and nature conservation sites. See Appendix 1 for further discussion of the approach taken in the current Minerals Local Plan and the proposed approach in the new Minerals Local Plan.

Processing at Ryall sand and gravel working

Sand and gravel working in Worcestershire

11. Where will minerals be worked?

In the previous consultation...

- We showed you what minerals we have in Worcestershire and explained that we can't control where minerals exist.
- We asked you if you had any additional information about quality, quantity or viability of resources.
- We said that the Minerals Local Plan would include a strategy to guide where minerals development should happen. We thought that this should be based on working **viable resources** in areas where there is the **greatest ability to achieve restoration priorities**.
- We said the Minerals Local Plan would not identify specific sites but would include:
  - a key diagram, directing development to broad areas where extraction is preferred, and identifying the restoration priorities in these areas.
  - Criteria-based location policies to assess the suitability of the site when proposals are brought forward.
  - Minerals safeguarding areas identifying areas where mineral resources should not be sterilised by other development.

Jargon Buster

Green Infrastructure (GI)
The planned and managed network of green spaces and natural elements that intersperse and connect our cities, towns and villages. GI comprises of many different elements including biodiversity, the landscape, the historic environment, the water environment (also known as blue infrastructure) and publicly accessible green spaces and informal recreation sites.

You said...

- With the exception of coal and one deposit of sand and gravel, you didn't tell us any additional information about mineral resources.
- You had mixed opinions about whether we should identify broad areas where extraction is preferred or focus on specific sites.
- In general you supported the consideration of the two location-drivers that we had identified to help us develop a strategy to guide where mineral development should happen:
  - Considering the location of viable resources: which you thought should include the consideration of demand and resource quality.
  - Identifying areas where there is the greatest ability to achieve restoration priorities.

  You also agreed that these considerations need to be carefully balanced when considering location. However there were differences of opinion about what the right balance would be.
- You also told us about a wide range of things that we should think about when considering the location of mineral development:

- You commented specifically on saved policy 5 of the current Minerals Local Plan relating to the exclusion of mineral extraction within the Abberley Hills and expressed a wish to retain this policy.

In addition...

- More detailed consideration of the geological information indicated that:
  - The map entitled "sand and gravel" in the First Stage Consultation document included other 'superficial deposits' including Head, Boulder Clay, Till and Alluvium. We have now amended the map to correct this error by deleting these categories and only using the BGS Rock Classification Scheme categories of "sand", "sand and gravel" and "gravel".
  - The Kidderminster Formation and Wildmoor Sandstone Formation should have been shown as "solid sands" on the map entitled "sand and gravel" but were shown on the crushed rock map in error.

  An updated overview of the resources is shown in Figures 2 and 3 (in Section 6).

Our approach now...

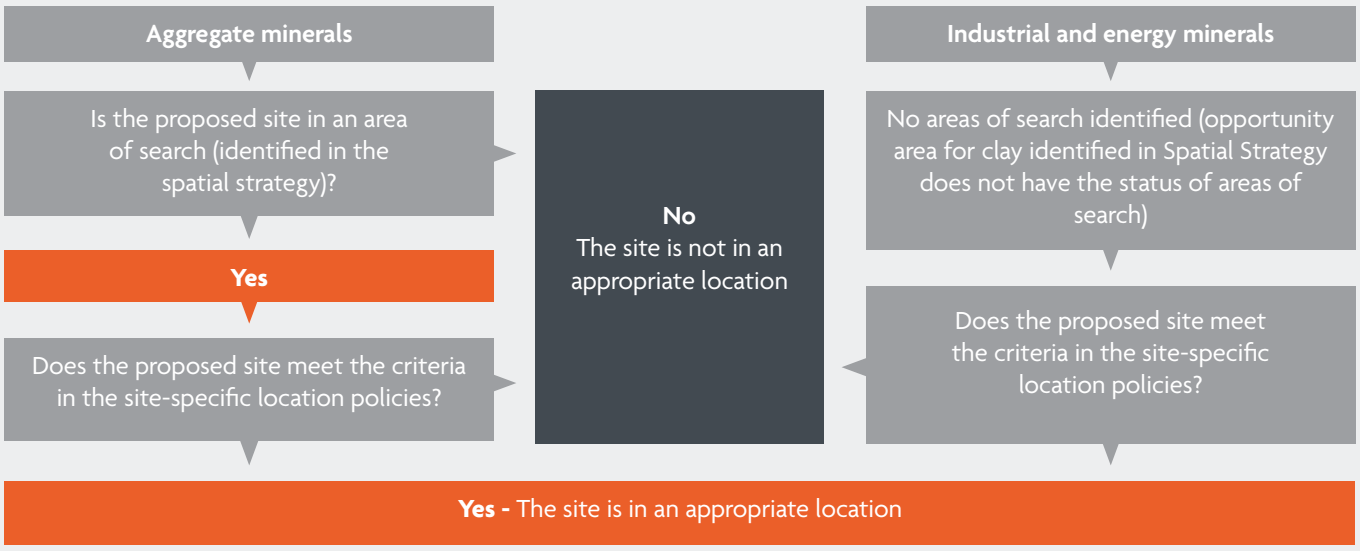
11.1 The vision says:

"...Minerals will be worked and located in a socially and environmentally sustainable way that takes account of the health and amenity of local people, the vitality of the local economy, the integrity of the environment and the value of local features and characteristics. Mineral workings will be restored to maximise social, environmental and economic gains, through coordinated restoration that delivers networks of green infrastructure in an integrated way.

These economic, social and environmental achievements will be delivered through the Spatial Strategy (figure 7) which drives development to the locations where the working of viable mineral resources will meet market demand and enable the delivery of the strategic restoration priorities identified."

Croft Farm Water Park, Bredons Hardwick, a former sand and gravel working

Figure 10. Our broad approach to addressing the question "where will minerals be worked?"



Note: When determining planning applications decisions must be made in accordance with the development plan unless material considerations indicate otherwise. Other policies in the development plan will therefore need to be considered to address other issues and it may be appropriate to take other material considerations into account.

11.2 To deliver this aspect of the vision we have developed areas of search for aggregates and an opportunity area for clay, and we will develop policies that applicants and planning officers will need in order to follow the decision making process set out in Figure 10 when considering whether a specific site is suitable for mineral working.

11.3 We intend to deliver the following objectives through a combination of defining areas of search for aggregates, an opportunity for clay and criteria-based policies that address where mineral working should take place:

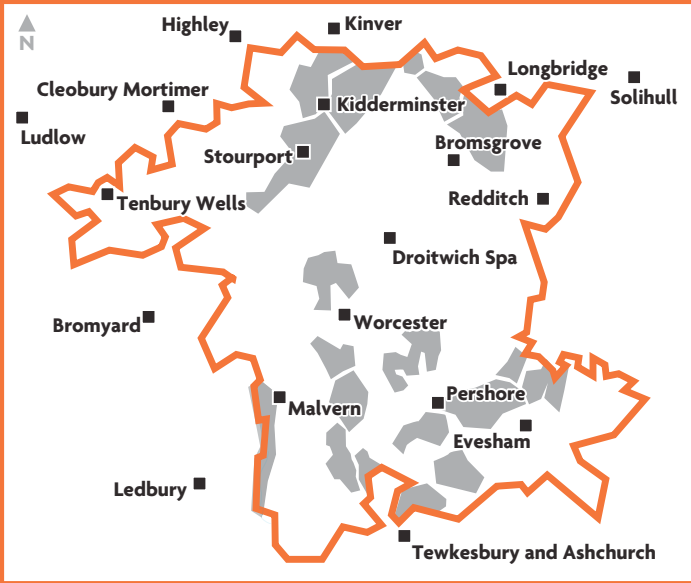
Table 6. How the draft objectives will be delivered through areas of search, the opportunity area for clay and site-specific location-criteria policies

Draft objective	How the objective will be considered through	
	Areas of search (which inform the spatial strategy)	Location-criteria policies to apply to individual proposals on a site by site basis
1) Ensure adequate and steady supply of aggregate, industrial and energy minerals over the life of the plan.	• Delivery of minimum landbank targets	
4) Ensure mineral operations are resilient to and mitigate the impacts of climate change.		• Sustainable transport • Flood risk • Subsidence and land stability
5) Utilise mineral restoration to enhance climate change resilience of the county.	• Habitat quality and fragmentation	• Flood alleviation • Soil resources
6) Protect and enhance the natural and historic environment.		• Water quality and quantity • Geodiversity • Biodiversity • Landscape character • International, national and local heritage assets • Archaeological features • Vernacular or locally important features • Green Belt

11.4 We have taken the approach outlined in Figure 11 to identifying areas of search for aggregates. The identified areas of search are shown in Figure 12.

Figure 11. Summary of approach to identifying areas of search for aggregates

Figure 12. Identified areas of search for aggregates



Legend

Areas of Search

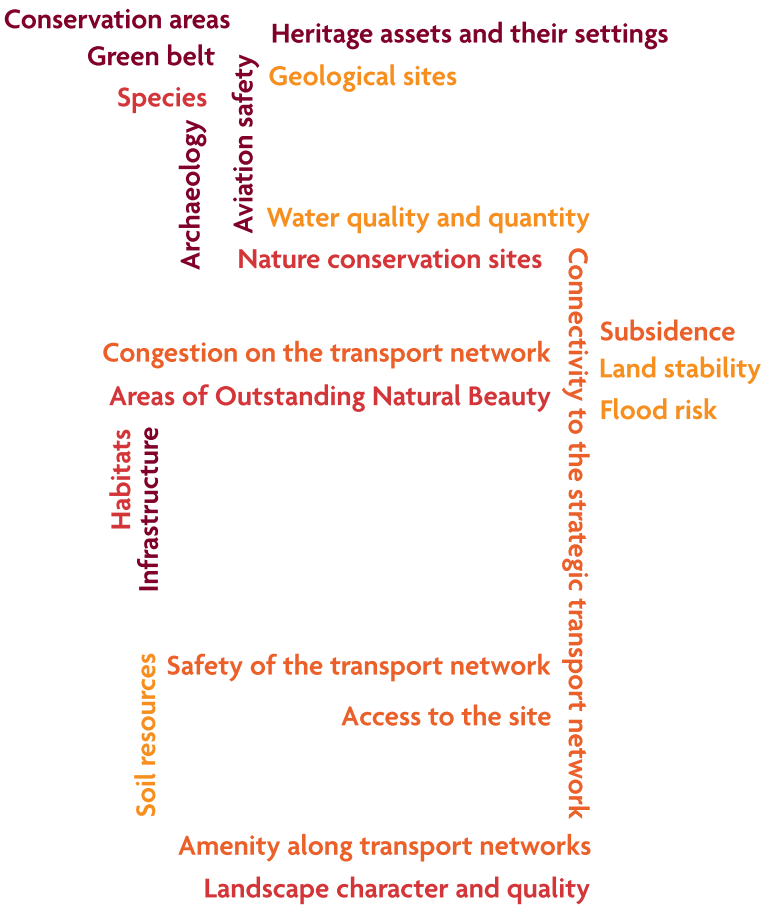
Figure 13. Opportunity area for clay

Legend

Opportunity area for clay

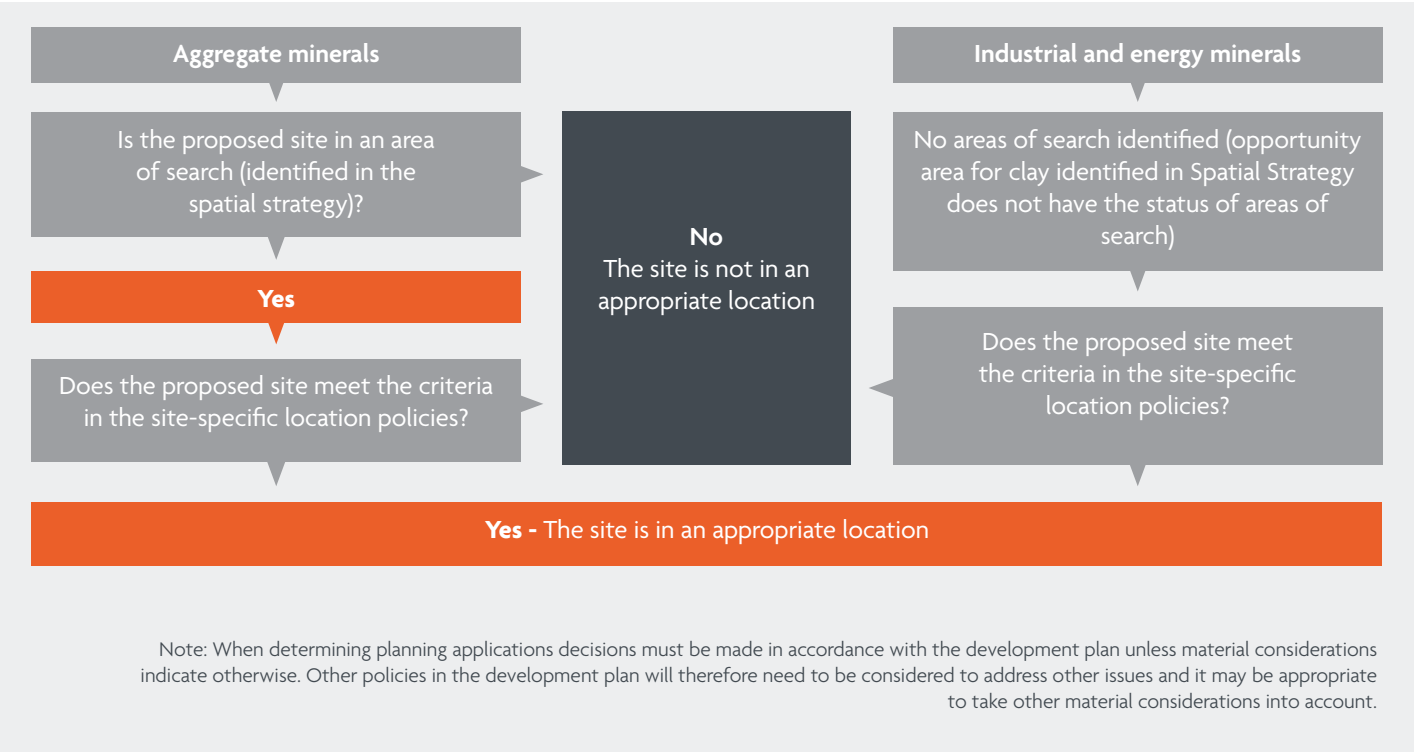
11.5 Due to a variety of factors (outlined below) we do not think that it is appropriate to identify areas of search for building stone or industrial or energy minerals. However, Mercia Mudstone (a type of clay) is currently worked in Worcestershire to make bricks and supplies a national market. Mercia Mudstone covers a large area of the county but as we have no information to refine this to identify meaningful areas of search we have instead identified an 'opportunity area' for clay. This will not have the same status as an area of search but will give an indication of areas where clay working is possible and will highlight its importance in the spatial strategy. The opportunity area for clay is shown in Figure 13.

11.6 We propose to develop site-specific location criteria policies to address the following issues:



The detail...

Figure 14. Our broad approach to addressing the question "where will minerals be worked?"



Note: When determining planning applications decisions must be made in accordance with the development plan unless material considerations indicate otherwise. Other policies in the development plan will therefore need to be considered to address other issues and it may be appropriate to take other material considerations into account.

11.7 National policy[40] says that:

"Local Plans should:...
- indicate broad locations for strategic development on a key diagram and land-use designations on a proposals map;
- allocate sites to promote development and flexible use of land, bringing forward new land where necessary, and provide detail on form, scale, access and quantum of development where appropriate;
- identify land where development would be inappropriate, for instance because of its environmental or historic significance; and
- contain a clear strategy for enhancing the natural, built and historic environment..."

11.8 To do this we intend to follow the broad approach outlined in Figure 14.

Aggregates

Sand, gravel and crushed rock:

11.9 We propose taking the approach that new aggregate development will be permitted in the areas of search identified in the Spatial Strategy where it is demonstrated that all of the locational criteria have been complied with. More detail about this approach is set out below.

Secondary and recycled aggregates:

11.10 The Waste Core Strategy[41] sets out policies to

✓ **Areas of search (which inform the spatial strategy)**

✓ **Location-criteria policies that apply to individual proposals on a site by site basis**

determine the appropriate location for managing secondary and recycled minerals and is now part of the Development Plan for Worcestershire. The Strategy was adopted in 2012 and will be monitored annually and reviewed if necessary. At present we do not believe that we need to revise or add to its policies for how and where recycled aggregates should be produced and managed.

Non-aggregate minerals

11.11 We do not propose to identify areas of search for building stone, industrial or energy minerals.

Building stone:

11.12 We know that some sources of building stone in Worcestershire are of local importance[42], however any future proposals to work building stone in the county are likely to result from a

40 National Planning Policy Framework, paragraph 157.

41 http://www.worcestershire.gov.uk/wcs

42 http://mapapps.bgs.ac.uk/buildingStone/BuildingStone.html

specific conservation need and would therefore relate to a particular location and specification of material. Given the specific characteristics of building stone and the significant variation between localities it is not considered practical or appropriate to identify areas of search. As building stone workings are likely to be relatively small-scale and limited in number, we will put in place policies to assess proposals if they come forward. We don't think this will compromise the delivery of the plan.

✗ **Areas of search (which inform the spatial strategy)**

✓ **Location-criteria policies that apply to individual proposals on a site by site basis**

Industrial minerals:

Clay

11.13 Clay is identified in the National Planning Policy Framework as an industrial mineral which the Minerals Local Plan should make provision for.

11.14 We know that Mercia Mudstone (a type of clay) is worked in Worcestershire to make bricks and supplies a national market; however we do not have the information to identify whether any particular sub-groups of Mercia Mudstone strata are more important than others. We know that Mercia Mudstone covers a large area of the county but as we have no information to refine this to identify meaningful areas of search we intend to identify an 'opportunity area' for clay. This will not have the same status as an area of search but will give an indication of areas where clay working is possible and will highlight its importance in the spatial strategy.

11.15 There is currently a 37 year landbank for clay in Worcestershire and we will put in place policies to assess proposals for clay working if they come forward, so we don't think that this approach will compromise the delivery of the plan.

✗ **Areas of search (which inform the spatial strategy)**

✓ **Location-criteria policies that apply to individual proposals on a site by site basis**

Figure 15. Mercia Mudstone clay formation in Worcestershire – opportunity area for clay

Legend

Opportunity area for clay

Consultation Question

Q19. We would like to refine the opportunity area for clay. If you have any information which could help us to do this, such as whether there are any particular sub-groups of the Mercia Mudstone strata which are more important than others, please let us know.

Salt and brine:

11.16 Salt and brine resources in Worcestershire are not considered to be workable or commercially attractive in the future due to issues relating to ground stability and subsidence. Therefore we do not intend to identify preferred locations for future working.

✗ **Areas of search (which inform the spatial strategy)**

✓ **Location-criteria policies that apply to individual proposals on a site by site basis**

Silica sand:

11.17 Silica sand deposits form part of the solid sand deposits (Wildmoor Formation). These solid sand deposits are considered in identifying areas of search for aggregates.

11.18 It could be argued that silica sand should be considered separately from sand for aggregate purposes, as silica sand in the Wildmoor formation is a source of naturally-bonded foundry sand, which was important in the early development of the foundry castings industry[43]. However it is not easy to identify the sections of the Wildmoor formation where silica sand is found. More importantly the properties of naturally-bonded sand cannot be controlled as easily as synthetic foundry sand and this, together with the wider use of chemical binders, has contributed to the decline in their use[44].
In Worcestershire silica sand is now principally worked as a source of building sand[45]. Given this information we do not intend to consider silica sand separately in identifying areas of search.

Areas of search (which inform the spatial strategy)

Location-criteria policies that apply to individual proposals on a site by site basis

Energy Minerals:

Coal

11.19 Coal resources have been identified in the county by the Coal Authority as resources that should be safeguarded but the area of workable coal in the county is relatively small. As evidence suggests that it is unlikely that there will be any interest in working these resources in Worcestershire during the lifetime of the Minerals Local Plan[46] and we have no information to refine the areas identified by the Coal Authority, we do not propose to identify areas of search for coal.

Areas of search (which inform the spatial strategy)

Location-criteria policies that apply to individual proposals on a site by site basis

Conventional and unconventional hydrocarbons

11.20 National policy[47] expects Mineral Planning Authorities to include the following in their Local Plans:

- Petroleum Licence Areas on their proposals maps;
- Criteria-based policies for each of the exploration, appraisal and production phases of hydrocarbon extraction. These policies should set clear guidance and criteria for the location and assessment of hydrocarbon extraction within the Petroleum Licence Areas.

11.21 There are no Petroleum Licence Areas in Worcestershire and there is no history of "conventional" oil and gas, coalbed methane or unconventional hydrocarbons such as shale gas being worked in Worcestershire. Coal bearing and shale strata exist in the county; however there is no evidence to suggest that these contain unconventional hydrocarbons such as shale gas.

11.22 Based on current evidence[48] the county is not considered prospective for coalbed methane. One exploration well for oil and gas has been drilled in the county and another on the border with Herefordshire. Neither of these led to the discovery of oil or gas.

11.23 Based on this information we do not propose to identify areas of search for hydrocarbons.

Areas of search (which inform the spatial strategy)

Location-criteria policies that apply to individual proposals on a site by site basis

Consultation Questions

Q20. Do you agree with the proposed approach for each of the industrial and energy minerals considered? Do you have any other information about these types of minerals in the county?

Q21. Do you have any additional comments to make on this topic?

43 BGS, DETR (1999) Mineral Resource Information for Development Plans, Herefordshire and Worcestershire: Resource Constraints (pg 16). http://www.bgs.ac.uk/mineralsuk/planning/resource.html

44 BGS, DETR (1999) Mineral Resource Information for Development Plans, Herefordshire and Worcestershire: Resource Constraints (pg 16). http://www.bgs.ac.uk/mineralsuk/planning/resource.html

45 BGS, DETR (1999) Mineral Resource Information for Development Plans, Herefordshire and Worcestershire: Resource Constraints Mineral Resources Map, inset box.

46 "Coal mining in Worcestershire" Worcestershire Minerals Local Plan Background Document (2012) (pg 2) www.worcestershire.gov.uk/mineralsbackground

47 "Planning Practice Guidance for Onshore Oil and Gas", Department for Communities and Local Government, 19th July 2013, Paragraph 23

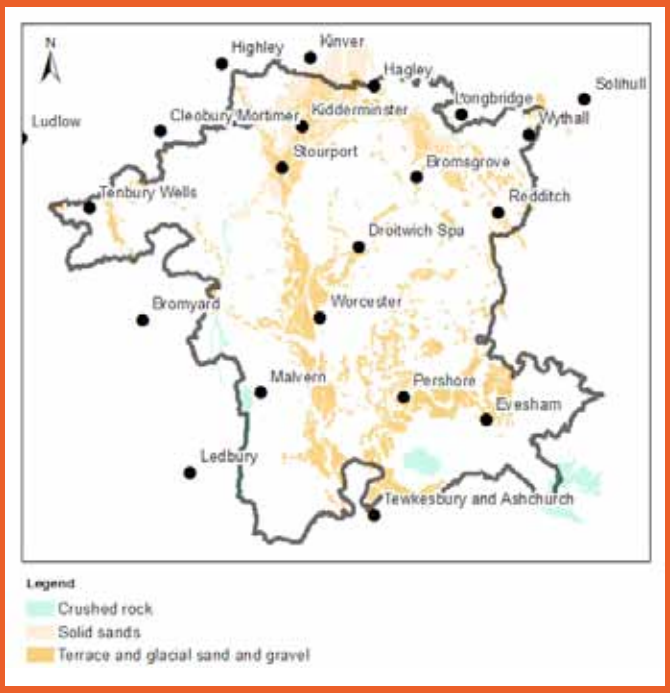
48 "Mineral Resource Information for Development Plans: Herefordshire and Worcestershire: Resources and Constraints." British Geological Survey 1999

Areas of search for aggregates

11.24 This section focuses on how the areas of search in the Spatial Strategy have been developed.

STEP 1
We used the BGS digital (1:50,000) data to identify sand and gravel deposits and mineral deposits suitable for crushed rock production.

Figure 16. BGS digital data for sand, gravel and crushed rock resources



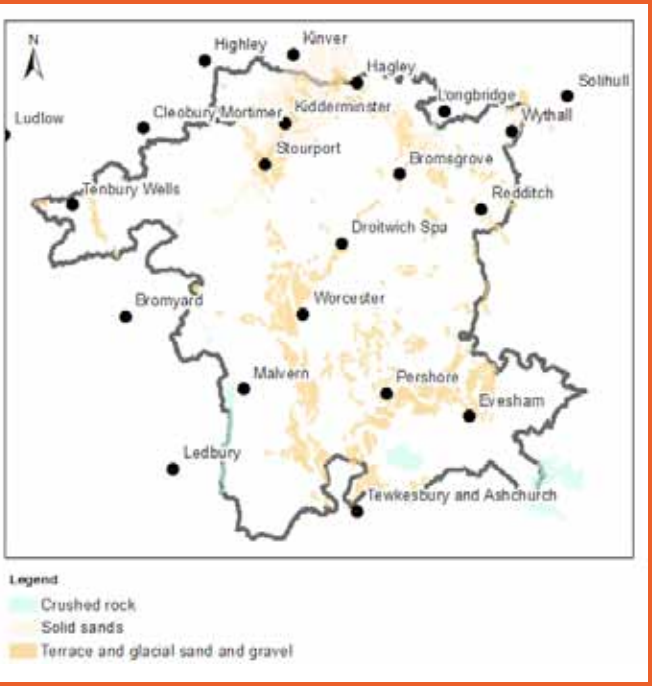
Sand and gravel deposits and mineral deposits suitable for crushed rock production 10ha or greater in size and 200m or wider have been assessed in step 2.

Deposits less than 10ha in size or less than 200m wide have been excluded from further consideration.

STEP 2

11.25 Deposits have been assessed to identify the significance of the mineral resource using information from the British Geological Survey (BGS) (presented in documents called 'memoirs') and previous planning applications. The boundary of the resource areas assessed has been altered to exclude previously worked areas, motorways and motorway junctions.

Figure 17. Sand, gravel and crushed rock resource areas assessed



is therefore unlikely that the whole resource area would be worked.

- Information about depth is limited in detail and the quality and depth can vary across the resource area.
- Constraints that will be set out in

Step 2 continued on next page

Step 2 continued

criteria-based policies have not been applied to the assessment of resource areas; it is possible therefore that some parts of the resource areas would be constrained from being fully worked.

11.29 Not all resource areas will be affected equally by all of these factors. At this stage we think that this will lead to an overestimate of the resource in some areas and an underestimate in others, averaging out across the county.

Converting the volume into a tonnage

11.30 We then converted the volumes into tonnages based on the following approaches:

Sand and Gravel

11.31 The estimated volume of sand and gravel resources has been converted into a tonnage based on assumptions about the weight of sand and gravel and the density of materials as published on www.simetric.co.uk.

Material	Density
Gravel with sand natural	1922 kg/m^3
Sand with gravel wet	2020 kg/m^3
Average	**1971 kg/m^3**

11.32 To avoid spurious accuracy this has been rounded to 2 tonnes/m^3.

Crushed Rock

11.33 The estimated volume of crushed rock resources has been converted into a tonnage based on assumptions about the weight of crushed rock and the density of materials as published on www.simetric.co.uk.

Material	Density
Gravel with sand natural	2611 kg/m^3
Sand with gravel wet	2691 kg/m^3
Average	**2651 kg/m^3**

11.34 To avoid spurious accuracy this has been rounded to 2.7 tonnes/m^3.

Determining significance

11.35 Where we have some information on the depth of resources and can therefore estimate a tonnage, the resource areas have been classified as follows:

Table 7. Significance of deposits based on estimated resource

Estimated resource: <600,000 tonnes	Estimated resource: 600,000-2,000,000 tonnes	Estimated resource: >2,000,000 tonnes
Classified as: Not significant	Classified as: Significant	Classified as: Key resource

Resource areas where no depth information is available

11.36 Where no information on the depth of resource is available, the following assumptions have been made:

Table 8. Significance of deposits based on size

	No information on depth to calculate resource
Small deposits: <50 ha	Classified as: Not significant
Medium deposits: 51-200 ha	Classified as: Significant
Large deposits: 201 ha +	Classified as: Significant

Compromised resources

11.37 Most resource areas include some built development, whether this is road, rail or buildings. In some cases this may limit the

Step 2 continued on next page

Step 2 continued

area that is available for mineral working, however in most cases this is only likely to affect small parts of the resource area. We have made provision for this by halving all estimated resources as outlined above and we think in most cases this will be adequate. However there are two circumstances in which we have considered this differently:

Motorways

Excluded from consideration as part of a resource area due to their significance.

Concentrated built development
such as dense village centres and urban areas:

The area of the deposit not covered by concentrated built development = less than 10ha

The resource is assessed, however it is concluded that the resource area is "compromised".

The area of the deposit not covered by concentrated built development = more than 10ha

The deposit is split into separate resource areas.

a) The area of the deposit covered by concentrated built development is assessed however it is concluded that the resource area is "compromised".

b) The area of the deposit not covered by concentrated built development is assessed based on relevant information.

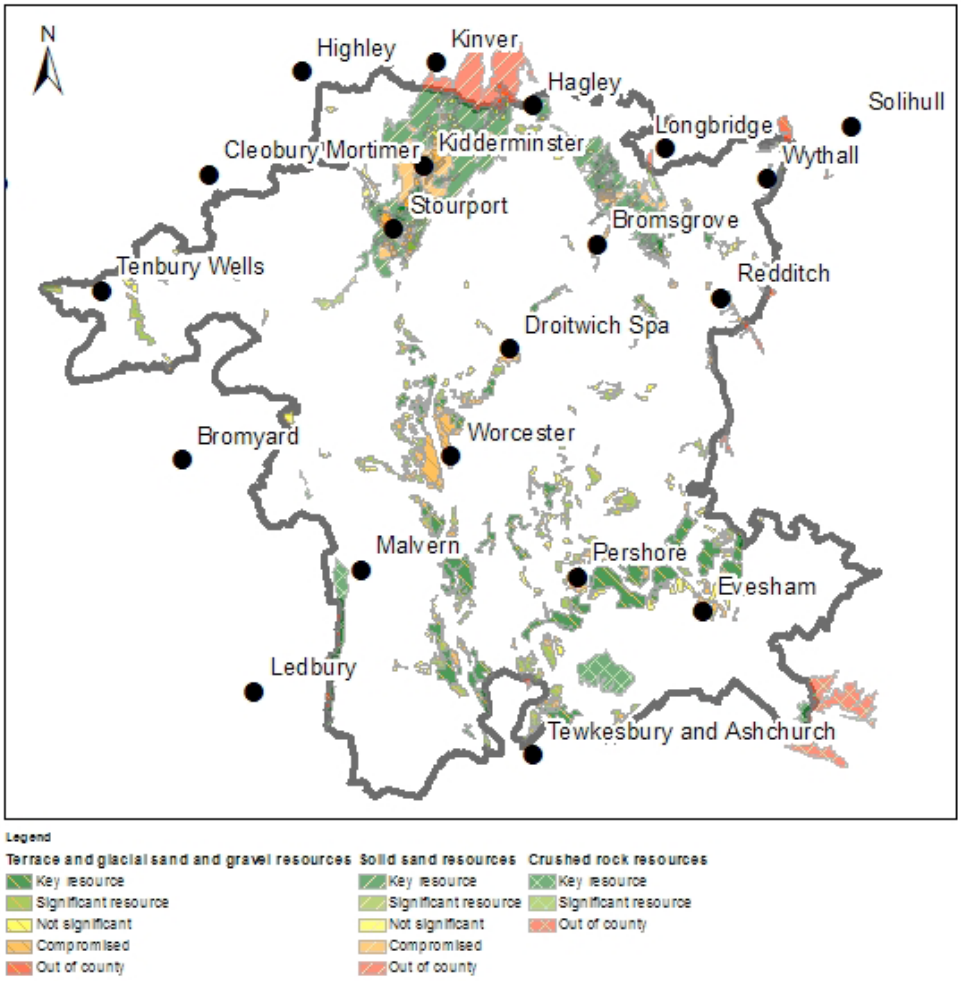
Step 2 continued on next page

Step 2 continued

The results from step 2

11.38 The results from step 2 are shown in Figure 18. Further details are set out in the background report "Analysis of Mineral Resources in Worcestershire" available on www.worcestershire.gov.uk/mineralsbackground. This report outlines the resource areas assessed, showing them on a map base and detailing the available information and any assumptions made.

Figure 18. Significance of mineral resources as assessed in Step 2



Consultation Question

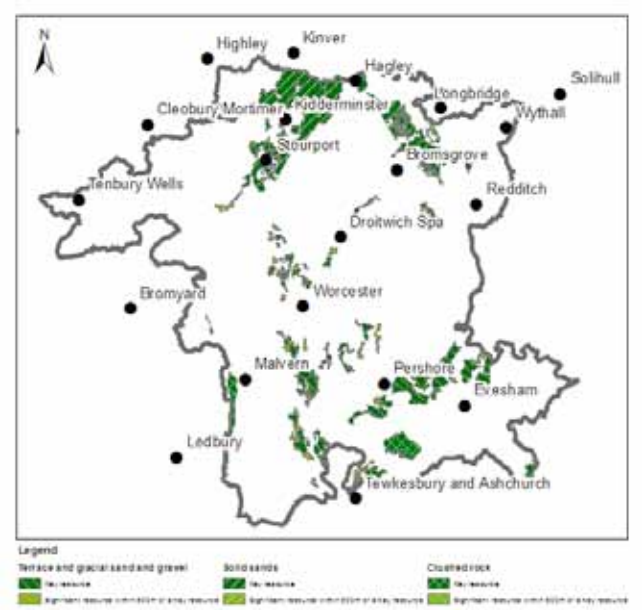
Q22. Do you have any additional information about the resources we have addressed in Step 2, or do you think that there are other deposits which we should assess?

STEP 3

11.39 We have used these classifications to define potential Areas of Search in the following way:

Key resource areas + **All significant resource areas within 500m of a key resource**

Figure 19. Key resources and significant resources within 500m of key resources



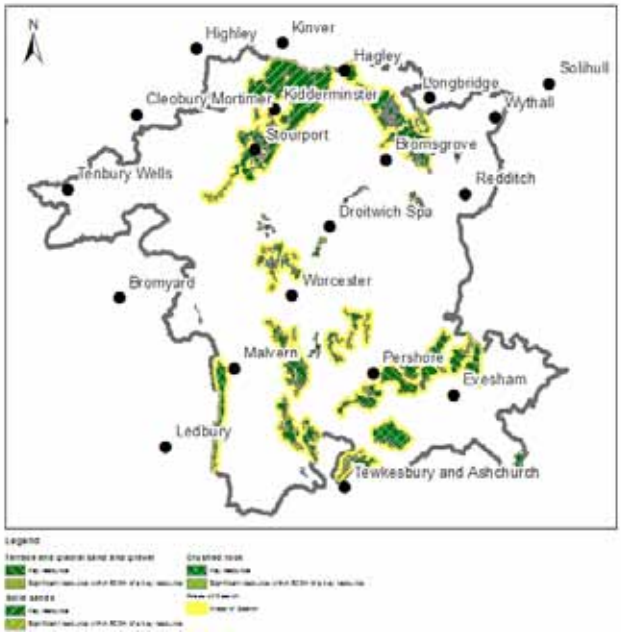
Cluster of **less than 200ha** of mineral resource

Excluded from further consideration

Cluster of **more than 200ha** of mineral resource

Identified as potential areas of search

Figure 20. Potential areas of search from clusters of more than 200ha of mineral resources



11.40 We have used clusters of resources of over 200ha in size because we consider this to be a scale at which there is realistic potential to deliver strategic restoration benefits (see Section 12 for details). We think that areas of search above this size will enable us to develop a landscape-scale approach to restoration and will enable priorities to be set which can be delivered across multiple sites over the life of the Minerals Local Plan and beyond.

11.41 A buffer of 250m has been applied around these grouped resources to form the area of search boundary. This takes into account the possibility of associated infrastructure such as plant and processing equipment being located outside of the deposit itself. This will also help to avoid the needless sterilisation of resources which could occur if operations were constrained to the resource areas themselves. As the areas of search include buffers around resource areas, they will form areas larger than 200ha in size.

STEP 4

11.42 To ensure that the Minerals Local Plan is deliverable we need to make sure that the areas of search are in locations that are best placed to serve likely market need for aggregates over the life of the plan. We have therefore used adopted and emerging Local Plans to identify settlements where high levels of development are proposed, using levels of housing growth as a proxy for market demand for minerals.

11.43 According to the Mineral Products Association, about 80 per cent of mineral products are used within 30 miles (48 km) of the quarry they are worked at. It can be assumed that the market pull decreases as distance increases. We have decided to use a 15km threshold to show the highest level of demand as this is approximately a third of the distance identified by the Mineral Products Association and we therefore think that it is reasonable to assume that there will be a relatively strong market pull at this proximity, and reduced thresholds of 10km and 5km to indicate where levels of demand are likely to be lower.

11.44 It is however acknowledged that this is a relatively crude indicator and does not take into account things such as transport routes to the market and the influence of areas where larger scale development is proposed.

11.45 We applied these thresholds around the following settlements to identify areas of search that are:

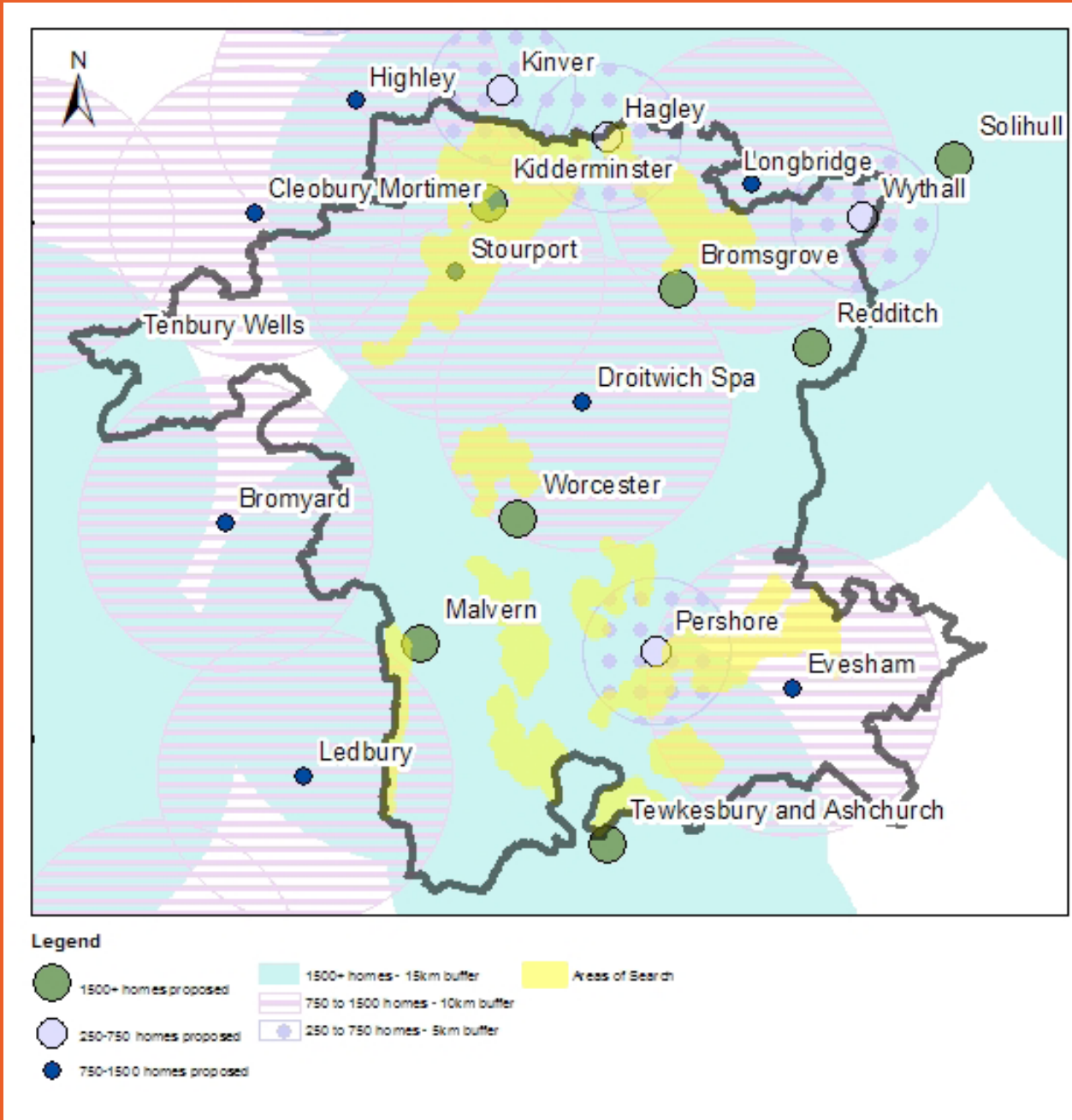
- Within 15km of settlements where 1,500 homes or more are proposed over the plan period. These being:
  - Bromsgrove
  - Cheltenham (Gloucestershire)
  - Dudley (Dudley Metropolitan Borough)
  - Hereford (Herefordshire)
  - Kidderminster
  - Leamington and Whitnash (Warwickshire)
  - Leominster (Herefordshire)
  - Malvern
  - Redditch
  - Sandwell (Sandwell Metropolitan Borough)
  - Solihull (Solihull Metropolitan Borough)
  - Tewkesbury and Ashchurch (Gloucestershire)
  - Warwick (Warwickshire)
  - Worcester
- Within 10km of settlements where 750 – 1,500 homes are proposed over the plan period. These being:
  - Bromyard (Herefordshire)
  - Cleobury Mortimer (Shropshire)
  - Droitwich Spa
  - Evesham
  - Highley (Shropshire)
  - Ledbury (Herefordshire)
  - Longbridge (Birmingham City)
  - Ludlow (Shropshire)
  - Stourport-on-Severn
- Within 5km of settlements where 250 – 750 homes are proposed over the plan period
  - Hagley
  - Pershore
  - Wythall

11.46 Where the area of search was identified as being outside of the "market-pull" thresholds we intended to exclude it from further consideration, however all areas of search at this stage were within the relevant proximity of one or more of these settlements, as shown in Figure 21.

Step 4 continued on next

Step 4 continued

Figure 21. Potential areas of search and market demand for minerals



The areas of search

11.47 The areas of search identified using this methodology are shown in Figure 22.

Figure 22. Identified areas of search for aggregates

11.48 Table 9 lists these areas of search by name and gives the reference numbers of the resource areas they include. Further detail about these resource areas is given in the background report "Analysis of Mineral Resources in Worcestershire" available on www.worcestershire.gov.uk/mineralsbackground.

11.49 Restoration priorities have been identified for each of these areas of search, and restoration profiles for each of the areas of search are set out in Appendix 2: Restoration profiles for the areas of search. This forms a fundamental aspect of the approach proposed for the new Minerals Local Plan and has informed the spatial strategy. The restoration priorities and the method for identifying these priorities are set out in Section 12

Table 9. Areas of search and the resource areas they include

Area of search	Resource areas included
Terrace and glacial sand and gravel	
Avon Corridor: Central	5/5, 16/1, 16/2, 16/4, 16/9
Avon Corridor: East	5/7, 5/8, 5/13, 5/16, 5/17
Avon Corridor: Lenches	5/1
Avon Corridor: West	16/5, 16/12, 26/1, 26/2
Bow Brook to Wadborough	7/13, 15/1, 15/2, 15/4
Carrant Brook Corridor	18/4, 18/5, 18/7, 18/8
Lower Severn Corridor: Central	7/17, 20/4
Lower Severn Corridor: North	9/6, 9/7, 9/8, 20/1, 20/2
Lower Severn Corridor: South East	19/1, 19/8
Lower Severn Corridor: South West	9/2, 9/3, 19/2, 19/6, 19/7
Upper Severn	1/4, 1/5, 1/11, 2/2, 2/3, 2/4, 22/3, 22/4, 22/5, 46/3, 46/5a
Solid sand	
Junction 4a: Central	3/7 (part), 3/8 (part)
Junction 4a: North	3/7 (part), 10/23
Junction 4a: South	3/8 (part), 12/8
Stour Corridor Sandstone: Central	2/21, 10/24
Stour Corridor Sandstone: South	1/30, 1/32, 2/22
Stour Corridor Sandstone: West	10/25
Crushed Rock	
Bredon Hill	6/1
Malvern Hills	9/10, 9/11, 9/12

Consultation Questions

Q23. Do you agree with this broad approach to identifying areas of search? Do you have any comments to make on this method?

11.50 The development of Minerals Local Plans has conventionally included a **"Call for Sites"** from the minerals industry and landowners. We do not intend to identify sites in this plan, however it would be useful if you could answer Question 23 to let us know about:

a any resource areas that you think are likely to be viable to be worked in future. These can be resource areas that we have already assessed in the "Analysis of Mineral Resources in Worcestershire" or additional resource areas that you have information about and think we ought to consider.

b any resource areas that you as a landowner or operator have an interest in working.

11.51 This information will be used to update the "Analysis of Mineral Resources in Worcestershire". It may also influence the areas of search and will help us to assess whether the Minerals Local Plan will be deliverable.

11.52 It would be useful if you could:

- identify which resource area you are referring to, if it is one we have already assessed, and a map of the specific area would also be helpful;
- clearly outline any information you have about the quality or quantity of the resource; and
- identify whether there is support for working from a) the landowner(s) and b) a mineral operator(s).

Please note that any formal reply will be made public.

The consideration of constraints

11.53 The current Minerals Local Plan identified "constraints" and used them in a sieve process to identify potential areas for sand and gravel extraction. This method was developed a long time ago; not all of the designations used then are still valid now or are no longer considered absolute constraints on minerals development, therefore this is not an approach that we will be taking forward in defining areas of search in the new Minerals Local Plan. National policy now requires a much more pro-active approach to enabling development. We do however realise that many of these issues are still important and we propose to consider them through location-criteria policies.

11.54 The constraints identified in the current Minerals Local Plan are detailed in **Appendix 1: Constraints considered in the current Minerals Local Plan and our approach now**. This appendix outlines the regulatory and national policy context as it exists today, and sets out how we propose to address each of the issues in the new Minerals Local Plan.

Site-specific location policies

11.55 We propose to enable new mineral development where it is demonstrated that all of the issues outlined in Table 10 relating to the location of mineral development have been adequately addressed. These policies will need to look at the impacts of the proposed development itself and any cumulative effects it might have in combination with other development in the area. This will be particularly important if there is a concentration of mineral operations in the locality. This table gives broad concepts. Once the concepts have been finalised they will be worked into draft policies and supporting text. We will consult on these in the next consultation.

Consultation Question

Q24. We would like to know if you support the policy issues identified. Please also give details of any additional considerations which should inform each topic.

Table 10. Issues to be addressed through policy criteria: Where will minerals be worked?

Sustainable transport	
a.	Connectivity to the strategic transport network – this would include road, water and rail where appropriate and would encourage the use of alternatives to road transport where practicable.
b.	Access to the site – policies would need to ensure that vehicular and pedestrian access to the site is safe and adequate to support the proposed development in that location.
c.	Safety – policies would need to protect against adverse impacts on the safety of the transport network
d.	Congestion – policies would need to protect against adverse impacts on congestion of the transport network.
e.	Amenity along transport routes - this will be a particular consideration where the proposal would result in a significant increase in traffic volume or a significant change to the nature of vehicle movements in an area.
Climate change	
f.	Subsidence and land stability - this might require specific consideration of whether the proposed development is in an area of subsidence or land stability or seismic vibration risk and would need to ensure that any minerals development would not cause or unacceptably increase this risk.
g.	Flood risk – national policy [49] identifies sand and gravel workings as "water compatible" development and other minerals and working processes as "less vulnerable". However all proposals would still need to consider impacts both on and off site when considering the appropriateness of the location.
h.	Soil resources - policies could promote the use of areas of poorer quality agricultural land in preference to higher quality agricultural land. This could be through a sequential test promoting mineral working in lower grade areas rather than higher grade areas of a site and might also include phasing of working to ensure worked land is reclaimed at the earliest opportunity. Where mineral working is proposed on high-grade agricultural land it may be appropriate to require it to be restored to the original quality or to require for an equivalent area of land to be upgraded to high quality agricultural land elsewhere.
i.	Water quality and quantity – protection needs to be given to ground and surface water resources and their dependent ecosystems. Considerations would relate to source protection zones and the Water Framework Directive.
Natural and historic environment	
j.	Geological sites – the location of proposed mineral workings should not have an unacceptable adverse impact on geological SSSIs or Local Geological Sites. In some cases the location may allow opportunities to enhance these features or mitigate any loss by exposing and retaining features elsewhere on the site.

49 Technical Guidance to the National Planning Policy Framework, March 2012.

k. European sites of nature conservation importance [50] - it is a legal requirement that protection is given to these sites. The impact mineral working could have on these sites needs to be considered, both on its own and in combination with other activities. Policies will need to be developed to prohibit mineral working on these sites or in locations that are likely to have a significant effect on these sites in line with the requirements of legislation. This might include consideration of physical loss of habitat, physical damage to habitat, changes to hydrological conditions, disturbance or contamination and effects in combination with other proposals.

l. Internationally identified habitats and species – it is a legal requirement that protection is given to these assets. Policies will need to be developed in line with these requirements to prevent disturbance or damage to resting places or breeding sites and policies will be developed to require proposals to demonstrate that in that location they will not have an unacceptable adverse impact on these habitats and species.

m. Nationally identified habitats, species and nature conservation sites – national policy encourages a high level of protection to be given to these features. Policies in the Mineral Local Plan will need to give protection to Sites of Special Scientific Interest, National Nature Reserves and Ancient Semi-Natural Woodland and to require proposals to demonstrate that they will not have an unacceptable adverse impact on these nature conservation sites, habitats or species. This will depend on the nature of the proposal and the features of the nature conservation site or the habitats and species present.

n. Locally identified habitats, species and nature conservation sites – policies will need to give protection to local wildlife sites, local nature reserves and priority habitats identified in the local Biodiversity Action Plans and networks of and links between these, unless impacts can be adequately mitigated. National policy encourages the protection of these features and policies will be developed to require proposals to demonstrate that they will not have an unacceptable adverse impact on these nature conservation sites, habitats and species.

o. Landscape character and quality - policy criteria will be developed to ensure that mineral working will not have an inappropriate impact on the character and quality of the landscape and that designated landscapes are protected. This would be different in each case but would, for example, ensure that where a feature is one of the defining qualities of a particular landscape e.g. skyline or hill features, these would be protected from unacceptable harm

p. Areas of Outstanding Natural Beauty – although national policy gives the highest status of protection to these areas, mineral working is not excluded from them. Policy criteria will need to be developed to ensure that the natural beauty of the Cotswolds AONB and Malvern Hills AONB is conserved and enhanced.[51]

q. Heritage assets and their settings –policies will need to protect heritage assets from substantial harm to or loss of significance. This will apply to designated or non-designated heritage assets and their settings; policies might refer to Scheduled and unscheduled Ancient Monuments, listed buildings and assets recorded on the Historic Environment Record, World Heritage Sites, and vernacular or locally important features.

r. Conservation areas – policies will need to ensure that the location of the proposed development will have no unacceptable adverse impacts on the character of any conservation areas.

50 The National Planning Policy Framework, paragraph 119, states that "The presumption in favour of sustainable development (paragraph 14) does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined". A Habitats Regulations Assessment is being developed alongside the emerging Minerals Local Plan and this will be taken into account as policies are developed.

51 In Worcestershire crushed rock resources are predominantly found in the AONBs. It is not likely to be possible to provide for the maintenance of the required landbank for crushed rock in Worcestershire from outside of the AONBs.

s. Archaeology – due to their scale and nature, mineral workings can have a unique impact on archaeological features. Policies might require desktop or site assessments of the archaeological potential of the location. Policies will need to ensure that scheduled and unscheduled archaeological or historic features and their settings are not unacceptably adversely affected, and could address the potential to protect or record archaeological features. Consideration will need to be given to the potential severity of the impact, the relative importance of the features and the opportunities to improve the understanding of the archaeological potential of an area.

t. Green belt – national policy identifies mineral extraction as "not inappropriate" in Green Belt provided it preserves the openness of the Green Belt and does not conflict with the purposes of including land in Green Belt[52]. Policies could be developed to ensure that mineral sites would not conflict with national policy on Green Belt.

Other issues

u. Infrastructure – polices will need to ensure that the location of the proposed development does not compromise the integrity of infrastructure, such as that relating to power, utilities or telecommunications.

v. Aviation safety – policies will need to address the potential risk to aviation safety from bird-strike. This is likely to refer to 'bird strike zones'.

52 National Planning Policy Framework, paragraph 90.

Consultation Question

Q25. If you think that there are other issues that we should consider relating to the location of mineral development, please provide details.

Kemerton Lake Nature Reserve

12. How will mineral workings be restored?

In the previous consultation...

12.1 We told you that:

"A "mineral working" or site is always temporary because once all of the mineral has been won the site will no longer be useful for mineral extraction and an after-use will have to be established. This is often referred to as "restoration", even though sites are not always returned to their original use. For example, it may be more appropriate for low-grade agricultural land to be restored to a lake or nature reserve. The Minerals Local Plan will need to include policies about this restoration."

"A mineral "working" or site has different impacts through its life. These vary through the operational and restoration stages and need to be considered right from the start of designing the development all the way through to looking after the site once it has been restored."

12.2 We also outlined the approach we intended to take. We said that we would develop the Minerals Local Plan to address:

- "The environment – including habitats, species, landscape, archaeology, historic environment, surface and ground water
- Transport – including site access and methods for transporting materials including road, rail, water, conveyors and pipelines
- Impacts on those nearby – including noise, dust, vibrations, visual impacts."

12.3 In addition we told you that we thought restoration potential should be a key driver when developing the Spatial Strategy for the Minerals Local Plan. This would mark a significant step-change in mineral planning policy in the county. We said that:

"The Minerals Local Plan will include a strategy to guide where minerals development should happen. We think this should be based on working viable resources in areas where there is the greatest ability to achieve restoration priorities.

The Minerals Local Plan will not identify specific sites. It will include:

- a key diagram, directing development to broad areas where extraction is preferred, and identifying the restoration priorities in these areas...
- Criteria-based location policies to assess the suitability of the site when proposals are brought forward".

12.4 We asked if you had any comments on this approach and if there were any other issues we should consider and whether you were aware of any information that would help us to develop these policies.

You said...

- You raised concerns that a blanket policy or county-wide approach to setting issue-based restoration priorities would not be appropriate, but generally supported the idea of an area-based approach depending on how this was developed.
- You agreed that considering restoration as a driver in the spatial strategy could deliver significant potential for integrated restoration benefits and made specific reference to habitat connectivity, landscape character, historic landscape character and flood alleviation.
- You said that we should consider the issues listed to the right when addressing restoration:
- The need for clear restoration plans at application stage was reiterated through several responses as a way of taking into account local considerations, setting clear priorities and aiding on-going monitoring both on and off-site. However the long-term flexibility of such schemes to respond to changing circumstances was also considered key.

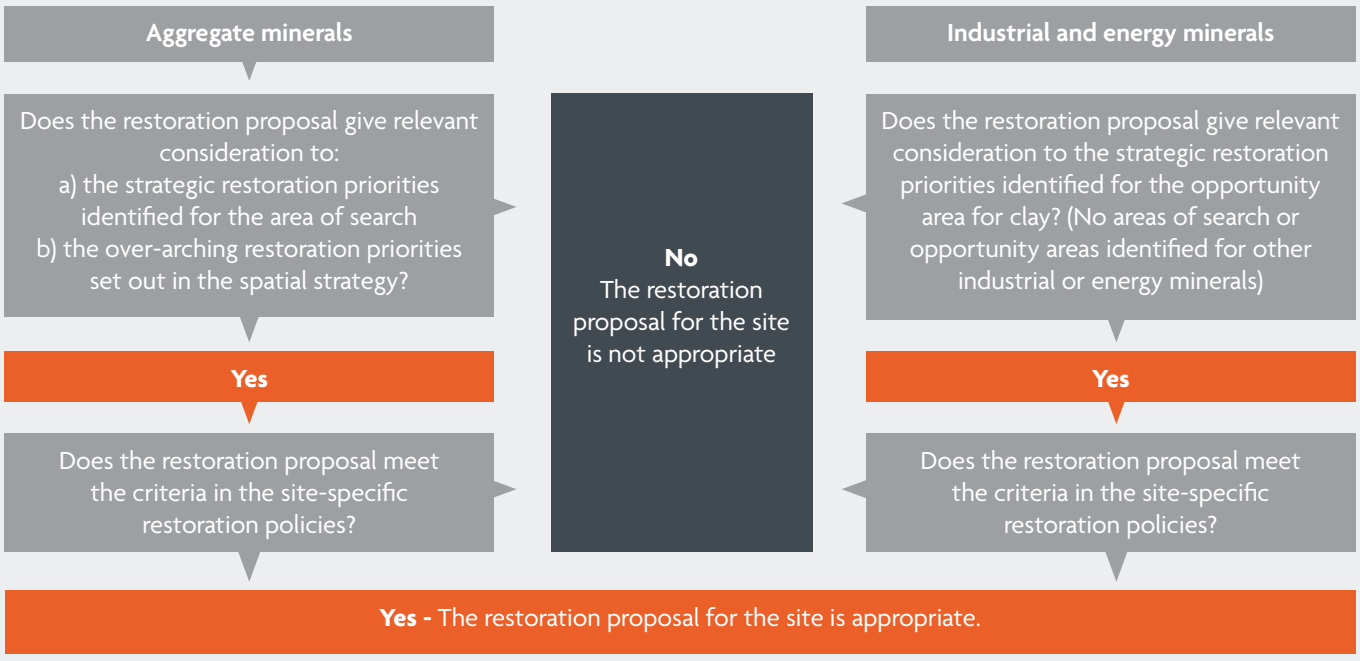
Our approach now...

12.5 The vision says:

> "...Mineral workings will be restored to maximise social, environmental and economic gains, through coordinated restoration that delivers networks of green infrastructure in an integrated way. These economic, social and environmental achievements will be delivered through the Spatial Strategy (Figure 7) which drives development to the locations where the working of viable mineral resources will also enable the delivery of the strategic restoration priorities it identifies."

12.6 To deliver this aspect of the vision we have taken the following approach to identifying how mineral workings should be restored:

Figure 23. Our broad approach to addressing the question "how will mineral workings be restored?"



Note: When determining planning applications decisions must be made in accordance with the development plan unless material considerations indicate otherwise. Other policies in the development plan will therefore need to be considered to address other issues and it may be appropriate to take other material considerations into account.

12.7 The strategic restoration priorities considered for the areas of search, opportunity area for clay and spatial strategy and the issues to be addressed through the site-specific restoration policies are based on the draft vision and objectives of the Minerals Local Plan.

12.8 We intend to deliver the following objectives through policies that address how mineral workings will be restored:

Table 11. How the draft objectives will be delivered through areas of search and opportunity area restoration profiles and criteria-based restoration policies

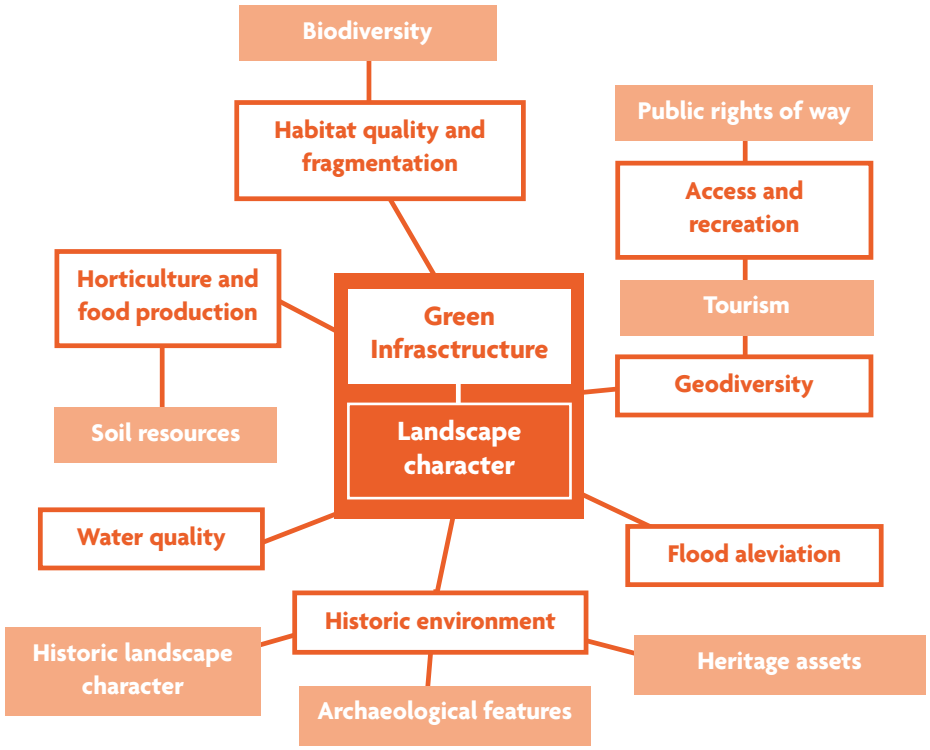
Draft objective	How the objective will be considered through	
	area of search and opportunity area restoration profiles	criteria-based restoration policies to apply to individual proposals on a site by site basis
3. Protect and enhance Worcestershire's key economic sectors[53].	• Horticulture and food production • Tourism	• Horticulture and food production • Environmental technology • Tourism
4. Ensure mineral operations are resilient to and mitigate the impacts of climate change.		• Sustainable transport • Maximising use of recycled materials and minimisation of waste • Design of development • Flood risk • Subsidence and land stability
5. Utilise mineral restoration to enhance climate change resilience of the county.	• Habitat quality and fragmentation • Flood alleviation	• Habitat quality and fragmentation • Flood alleviation • Soil resources
6. Protect and enhance the natural and historic environment.	• Water quality and quantity • Geodiversity • Biodiversity • Landscape character • International, national and local heritage assets • Archaeological features	• Water quality and quantity • Geodiversity • Biodiversity • Landscape character • International, national and local heritage assets • Archaeological features • Vernacular or locally important features
7. Protect and enhance health and amenity.	• Public rights of way • Access and informal recreation	• Public rights of way • Access and informal recreation
8. Involve all those affected as openly and effectively as possible		• Pre-application discussion with communities and other stakeholders • Community liaison groups

53 Worcestershire's key sectors are outlined in the Worcestershire Local Enterprise Partnership's Business Plan 2012 "The Outlook is Bright in Worcestershire".

Fish Hill Quarry

High-level strategic restoration priorities for the areas of search, opportunity area and Spatial Strategy

Figure 24. High-level strategic restoration priorities



12.9 The draft vision and the draft objectives of the Minerals Local Plan and the relevant issues they should address have been used to identify eight high-level strategic restoration priorities (shown in bold on Figure 24) and several relevant issues (shown in the shaded boxes) to be considered for each area of search, the opportunity area for clay and in developing the restoration priorities in the Spatial Strategy.

12.10 Profiles for each area of search are given in **Appendix 2: Restoration profiles for the areas of search** and a profile for the opportunity area for clay is given in **Appendix 3: Restoration profile for the opportunity area for clay**. A summary of the priority levels given to the high-level strategic priorities in each area of search is set out in Table 12 and maps showing the distribution of these priorities are given in **Appendix 4: Maps showing the distribution of restoration priorities**.

Table 12. Summary of the level of priority to be given to high-level restoration priorities in each area of search and the opportunity area for clay

Area of Search	Flood alleviation	Habitat quality and fragmentation	Water quality	Geodiversity	Horticulture and food production	Historic environment	Access and recreation
Terrace and glacial sand and gravel							
Avon Corridor: Central	2	2	1	-	1	2	2
Avon Corridor: East	2	2	1	-	2	2	2
Avon Corridor: Lenches	2	1	1	-	2	3	2
Avon Corridor: West	2	2	1	3	1	1	2
Bow Brook to Wadborough	2	1	2	-	2	2	2
Carrant Brook Corridor	2	2	2	1	1	1	2
Lower Severn Corridor: Central	3	1	2	1	1	1	1
Lower Severn Corridor: North	3	1	2	1	2	1	3
Lower Severn Corridor: South East	3	1	2	1	1	1	3
Lower Severn Corridor: South West	3	1	1	1	2	1	3
Upper Severn	2	1	2	1	2	1	1
Solid sand							
Junction 4a: Central	1	1	2	3	3	1	1
Junction 4a: North	1	1	2	-	2	1	2
Junction 4a: South	1	1	2	2	2	1	1
Stour Corridor Sandstone: Central	1	2	1	3	2	1	3
Stour Corridor Sandstone: South	1	1	1	1	2	1	3
Stour Corridor Sandstone: West	1	1	1	1	3	1	1
Crushed rock							
Bredon Hill	2	1	-	1	-	1	2
Malvern Hills	2	1	-	1	-	1	3
Clay							
Opportunity area for clay	1	2	1	1	3	1	1

Key to priority levels:

1 = Determining factor
2 = Significant component
3 = Integrate wherever possible
- = Not likely to be significant in this area of search

Site-specific restoration policies

12.11 We propose to develop site-specific location criteria policies to address the following issues:

The detail...

Green Infrastructure underpinning our approach to restoration

12.12 The vision states that "mineral workings will be restored to maximise social, environmental and economic gains, through coordinated restoration that delivers networks of green infrastructure in an integrated way".

12.13 Green Infrastructure (GI) is the planned and managed network of green spaces and natural elements[54] that intersperse and connect our cities, towns and villages. GI comprises many different elements including biodiversity, the landscape, the historic environment, the water environment (also known as blue infrastructure) and publicly accessible green spaces and informal recreation sites.

12.14 The Green Infrastructure approach integrates the consideration of economic, health and social benefits to ensure that delivery against both environmental and socio-economic objectives is central to the planning, management and delivery of these spaces. The underlying principle of the Green Infrastructure approach is that the same area of land can frequently offer multiple benefits and balances environmental and socio-economic considerations.

12.15 Green spaces and natural elements do not exist in isolation. By considering sites in context, looking at existing features and networks and what can realistically be delivered, it is possible to create coherent corridors of multi-functional green infrastructure. Considering networks in a planned and integrated way achieves benefits that are far greater than when individual components are considered separately or by attempting to deliver everything everywhere. There are many advantages to be gained from a critical mass of Green Infrastructure that is clustered together and other benefits to be gained from pursuing different but integrated priorities on different sites.

12.16 National policy highlights Green Infrastructure as being an important component of dealing with climate change[55] and says that "Local planning authorities should set a strategic approach in their Local Plans, planning positively for creation, protection, enhancement and management of networks of biodiversity and green infrastructure"[56].

12.17 The restoration of mineral workings usually creates 'green spaces', with restoration in Worcestershire tending to restore land to agriculture, create habitats or create recreation facilities. When developing the spatial strategy and restoration policies in the new Minerals Local Plan we aim to take a holistic approach to driving the restoration of mineral workings in a way that delivers networks of Green Infrastructure. This will be a step-change for mineral development in the county.

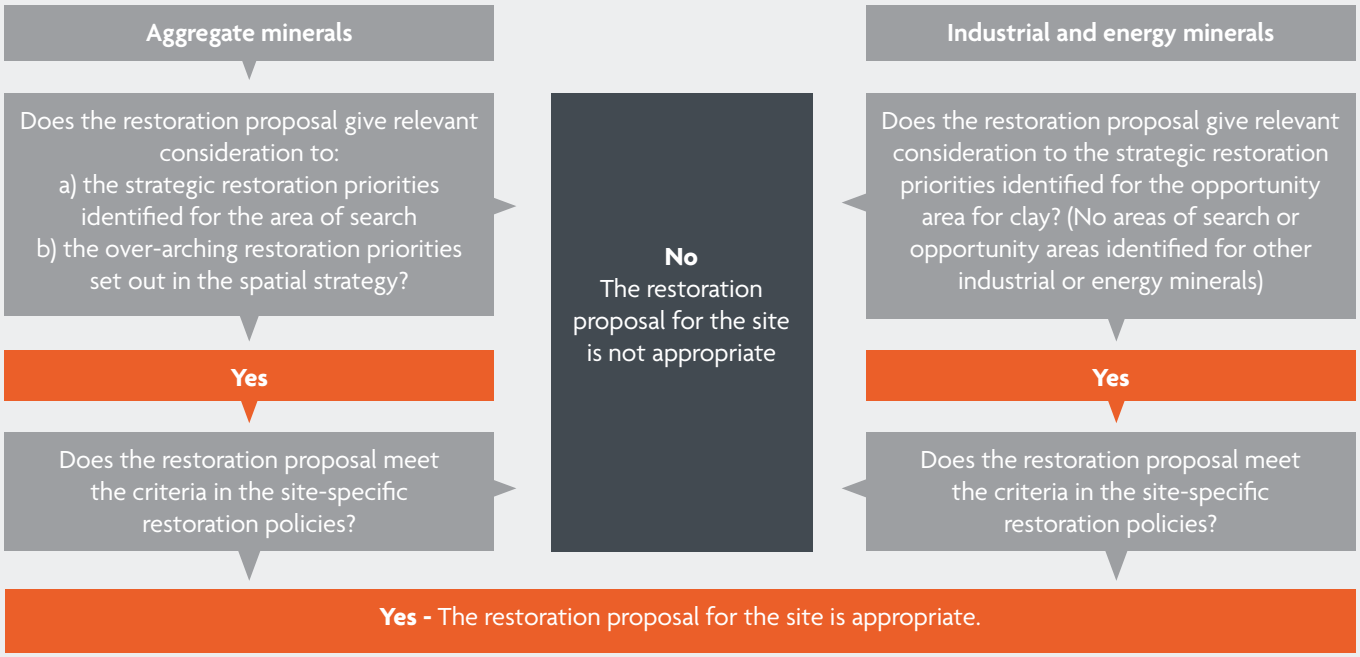
12.18 The approach we propose to take to using Green Infrastructure principles to drive restoration in the county will vary depending on the type of mineral being worked, as Figure 25 indicates:

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

55 National Planning Policy Framework, paragraph 99

56 National Planning Policy Framework, paragraph 114

Figure 25. Our broad approach to addressing the question "how will mineral workings be restored?"



Note: When determining planning applications decisions must be made in accordance with the development plan unless material considerations indicate otherwise. Other policies in the development plan will therefore need to be considered to address other issues and it may be appropriate to take other material considerations into account.

12.19 The type of mineral being worked and the types of working proposed will also have an impact on the overall restoration scheme. Table 13 indicates the types of excavation likely for different minerals and Table 14 indicates how this might have an impact on restoration potential. The criteria in the site-specific restoration policies will need to make provision for this wide range of considerations.

Agricultural restoration at Church Farm, Grimley

Table 13. Most common types of excavation associated with the different types of minerals found in Worcestershire

		Excavation type							
		Shallow pits with little overburden or mineral waste	Shallow pits with lots of overburden or mineral waste	Deep quarries or pits with little overburden or mineral waste	Deep quarries or pits with lots overburden or mineral waste	Working into hill sides	Below water table	Above water table	Borehole
Mineral type	Building stone	✔	✔		✔	✔		✔	
	Aggregate Minerals								
	Terrace and glacial sand and gravel	✔		✔			✔	✔	
	Crushed rock			✔	✔	✔	✔	✔	
	Solid sand			✔				✔	
	Industrial Minerals								
	Clay and shale	✔		✔			✔	✔	
	Brine								✔
	Energy Minerals								
	Coal		✔	✔	✔	✔	✔	✔	
	Hydrocarbons								✔

Table 14. Types of excavation and impact on restoration potential

Type of excavation	Impact on restoration potential
Shallow pits with little overburden or mineral waste	Significant infill from onsite materials unlikely, final landform likely to be lower
Shallow pits with lots of overburden or mineral waste	Potential for infill from onsite materials, final landform to original levels possible for part of site
Deep quarries or pits with little overburden or mineral waste	Significant infill from onsite materials unlikely, final landform likely to be deep, cliff faces more likely but graded faces possible
Deep quarries or pits with lots overburden or mineral waste	Potential for infill from onsite materials, final landform likely to be deep, graded faces possible, cliff faces possible
Working into hill sides	Original landform changed, cliffs and graded faces possible, tunnels possible
Below water table	Final landform very likely to include water body, variations in depths possible
Above water table	Any water bodies unlikely unless artificially created and fed
Borehole	Return to original landform likely, leaving capped borehole, excavated material likely to be removed off site

Restoration of mineral workings: areas of search and the spatial strategy

12.20 The Spatial Strategy (Figure 7) identifies

- 19 areas of search for aggregates:
  - 11 areas of search for terrace and glacial sand and gravel
  - 6 areas of search for solid sands
  - 2 areas of search for crushed rock
- 1 opportunity area for clay

12.21 Our broad approach to using Green Infrastructure principles to drive restoration in the county is outlined in Figure 26.

Figure 26. Using Green Infrastructure principles as a driver for identifying where minerals should be worked and how they should be restored

Step 1: Developing a spatial strategy to guide where mineral working should happen, based on "working viable resources where there is greatest ability to achieve restoration priorities"

The detail of how we have done this is given in Section 11. To summarise, we have taken a different approach for different types of minerals:

Aggregates

We assessed resource potential to identify areas where we think mineral resources are likely to be significant. We have then identified areas of search where both of the following criteria are met:

- Key and significant resources form clusters of more than 200ha – we consider this to be a scale at which there is realistic potential to deliver strategic restoration benefits. This approach is based on GI principles as it considers the scale at which the buffering, expansion or creation of habitats is considered to become most beneficial. It is also the scale at which sub-regional provision of recreation assets can be realised. Smaller resource clusters would also limit the potential to integrate other benefits.
- Clusters of key and significant resources of more than 200 ha are in proximity to anticipated market demand.

Industrial minerals

- Silica sand is considered in the identification of areas of search for aggregates.
- We don't think it is likely that salt or brine will be worked in the county in the future so we haven't identified broad locations for future working
- We do not have the information to identify 'areas of search' for clay but we have identified an 'opportunity area' based on the distribution of Mercia Mudstone across the county.

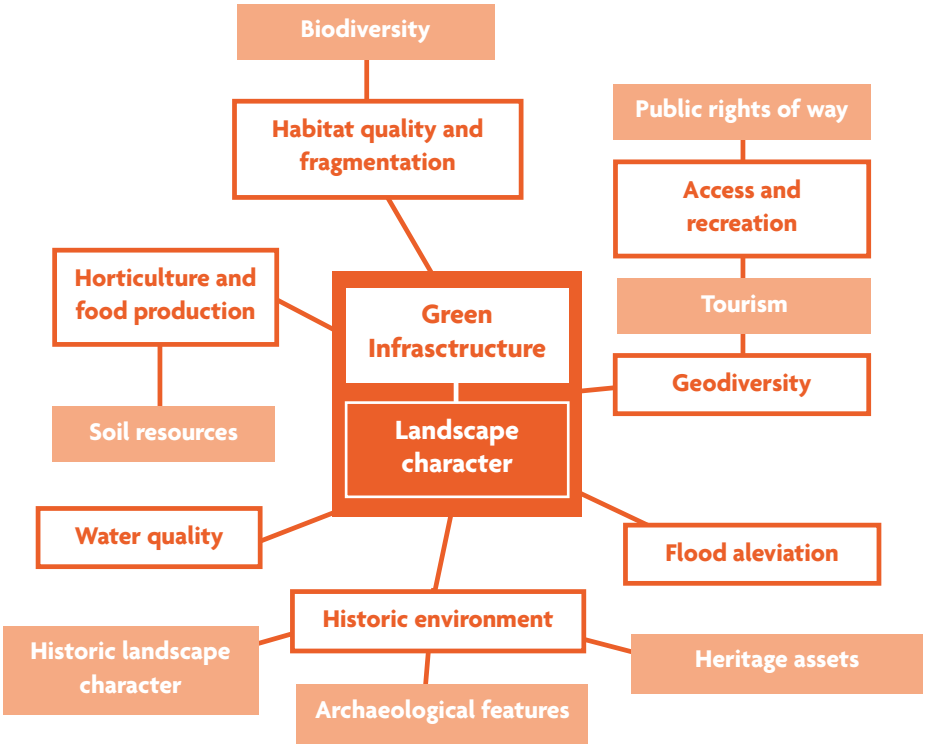
Energy minerals

We don't think it is likely that energy minerals will be worked in the county in the future so we haven't identified broad locations for future working.

Step 2: Using Green Infrastructure principles to identify relevant mineral restoration priorities

The draft objectives of the Minerals Local Plan and the relevant issues they should address (see Section 7: Vision and Objectives) have been used to identify eight high level strategic restoration priorities (shown in bold on Figure 27) and several relevant issues (shown in the shaded boxes).

Figure 27. High-level strategic restoration priorities



Step 3: Identifying the importance of these issues in each area of search for aggregates and the opportunity area for clay

Areas of search for aggregates

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

We have developed a method for considering the importance of each of these high-level strategic restoration priorities in the areas of search. This is detailed below. However, to summarise; landscape character is considered to be an overarching consideration and the other strategic restoration priorities have been assessed using the following measures:

Issue	Key measure used
Flood Alleviation	Environment Agency policy area in the River Severn Catchment Flood Management Plan.
Habitat quality and fragmentation	Biodiversity quality as assessed as part of the Worcestershire Habitat Inventory and landscape fragmentation as assessed as part of the Worcestershire Landscape Character Assessment.
Water Quality	Water Framework Directive assessments of water courses in the area.
Geodiversity	Proximity to the Abberley and Malvern Hills Geopark, geological Sites of Special Scientific Interest, local geological sites and the Malvern Hills AONB and Cotswolds AONB .[57]
Horticulture and food	Agricultural land quality as recorded by Natural England
Historic environment	Potential for the presence of heritage assets as assessed as part of the Historic Environment Assessment
Access and recreation	Accessible Natural Green Space Standards and Recreation opportunity areas identified in the Worcestershire Green Infrastructure Framework and emerging Local Plans

We have rated the significance of each of the strategic restoration priorities in each area of search as:

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

These are set out in restoration profiles for each area of search (see Appendix 2) and have been used to inform the Spatial Strategy.

The opportunity area for clay

Based on the current landbank for clay, we think that working of clay resources is likely to be less extensive than aggregate working. The opportunity area for clay also covers a more wide-spread area than the areas of search for aggregates. It is therefore unlikely that future clay workings will form 'corridors' of extraction and therefore corridors of restoration potential. However we think that it is still relevant to consider the priorities and issues identified in step 2 to identify those which have the potential to gain from restoration of clay sites.

The restoration profile for the opportunity area for clay (see Appendix 3) adapts the method used to assess areas of search for aggregates and takes a very high-level approach to consider the potential benefits. The same measures and ratings are used

57 The 'Special Qualities' of The Malvern Hills AONB and The Cotwolds AONB include their geodiversity.

Step 4a: Using this information to develop the spatial strategy

Areas of search for aggregates

The fundamental principle of Green Infrastructure is that it should integrate a number of priorities and considerations. However, in order to give strategic direction in the Spatial Strategy we have used the restoration profiles for each area of search to identify over-arching considerations for different sections of the county. These are shown on the spatial strategy diagram (Figure 7).

This provides a real opportunity to deliver strategic restoration benefits rather than piece-meal restoration schemes.

The opportunity area for clay

The restoration profile for the opportunity area for clay identifies the key issues which could benefit from the restoration of clay workings. However, the opportunity area covers a significant proportion of the county and we do not think that setting over-arching priorities is useful at this scale.

Step 4b: Using this information to drive restoration in the areas of search for aggregates and opportunity area for clay

Areas of search for aggregates

Each area of search has a restoration profile identifying strategic restoration priorities (see Appendix 2)

We need to develop a policy framework to ensure these priorities are met. (Alternative approaches are set out below).

The opportunity area for clay

The restoration profile for the opportunity area for clay (see Appendix 3) identifies the key issues which could benefit from the restoration of clay workings.

We need to develop a policy framework to ensure these priorities are met. (Alternative approaches are set out below).

Next steps:

The next steps depend on the responses to this consultation, however we have outlined below what we consider to be realistic alternatives. The consultation questions ask for your comments on these as well as the other stages outlined here.

12.22 Below, we have set out in more detail the approach we have taken to Step 3 and Step 4, as well as alternative approaches to drive the delivery of restoration priorities.

Consultation Question

Q26. We would like to know whether you agree with the approach we have taken to each of the issues, and whether you think there are any additional considerations which should inform any of these topics.

Q27. Is there anything else we should consider?

Considering each of the high-level restoration priorities to develop restoration priorities for each area of search and the spatial strategy

Landscape character

Context

12.23 Worcestershire includes 22 rural Landscape Types[58], and the key characteristics of these define the landscape that we see about us.

12.24 Mineral extraction by its nature results in a change to the landscape. In order to ensure that the overall landscape quality of the county is not degraded by mineral workings, consideration must be given to the existing landscape character and the nature of the changes that could result from mineral extraction. Following extraction, the connectivity of the landscape needs to be re-established. Depending on the type of mineral operation and the impact on the landscape, it may be possible to restore workings to their former Landscape Type by recreating or enhancing the key characteristics.

12.25 However, in some cases the scale or nature of the workings will prohibit this from being done effectively. In such circumstances it may be more appropriate to embrace the opportunity for whole-scale landscape change and restore the site to a different landscape type. This needs to be done in a planned way that will create a coherent change across the area of search. Creating individual features within the landscape may be of interest on a site-specific scale, and help to define local distinctiveness, but only when they become a repeated element will they begin to define the overall character of the wider landscape and constitute a new landscape type.

12.26 It may be possible to restore the integrity of the landscape by replicating the characteristics of another county Landscape Type. Where the new landscape character will not conform to the overall character of any of the existing Landscape Types, it may be appropriate to accept that a new Landscape Type has been created. However, it must be on a scale large enough to be discernible as a different Landscape Type. Piecemeal degradation of the landscape, caused either by removing characteristic features and attributes or by adding inappropriately to them, is not acceptable.

Approach to developing restoration priorities for each area of search for aggregates (step 3)

12.27 In the area of search profiles, we have identified the predominant Landscape Types in the area of search and summarised the key characteristics of those Landscape Types.

12.28 As landscape character is "an expression of pattern, resulting from particular combinations of natural and cultural factors that make one place different from another"[59], we think that landscape character should form the framework within which the other priorities sit and when landscape character is respected this should facilitate the delivery of cohesive restoration schemes.

Next steps

12.29 If this broad approach is supported it is likely the information relating to landscape character will be refined for the next stage of consultation on the new Minerals Local Plan. This could include the identification of the types of landscape impacts likely from mineral workings in each area and the restoration potential of workings.

Approach to developing restoration priorities for the opportunity area for clay (step 3)

12.30 In the restoration profile for the opportunity area for clay, we have identified the regional character areas and the predominant Landscape Types in the opportunity area and summarised the key characteristics of those Landscape Types.

12.31 We think that landscape character should form the framework within which the other priorities sit and when landscape character is respected this should facilitate the delivery of cohesive restoration schemes.

58 The Worcestershire County Landscape Character Assessment Supplementary Guidance (2011) has described the landscape of Worcestershire in terms of repeatable patterns of settlement, tree cover, land use and enclosure. Landscape character types have been identified through assessing the characteristics that make up landscape character. Different combinations of these characteristics will result in different landscape character types (called Landscape Types in the Worcestershire LCA).

59 Countryside Agency LCA guidelines quoted in The Worcestershire County Landscape Character Assessment Supplementary Guidance (2011)

Next steps

12.32 If, as a result of consultation responses, we are able to refine the opportunity area, it is likely that the information relating to landscape character will be refined for the next stage of consultation on the emerging Minerals Local Plan. This could include the identification of the types of landscape impacts likely from mineral workings in the area and the restoration potential of workings.

Approach to developing restoration priorities in the Spatial Strategy (step 4a)

12.33 Landscape character has not been specifically considered in defining the Spatial Strategy, but all restoration schemes would be expected to fit within the landscape principles outlined above. Consideration will need to be given to ensure that the special characteristics of the two Areas of Outstanding Natural Beauty in the county are protected through the policy framework.

Flood alleviation

Context

12.34 Where mineral workings are situated in floodplains there are many restoration options which have the potential for providing flood benefit. This could include flood storage reservoirs, restoring channels to reinstate more natural fluvial-floodplain processes or providing more sinuous and wider channels with greater flow variability. Any mineral extraction that provides additional channel conveyance, flood storage or increases channel length, will have a net downstream benefit on flood risk. In some cases flood risk reduction may be strategically important and a restoration design which maximises reduction of flood risk would be most suitable. This might involve detailed hydraulic design and engineered structures. In other circumstances mineral site restoration could facilitate flood alleviation by providing a river restoration scheme which promotes natural fluvial and floodplain processes, improving habitat variability and providing additional flood storage[60].

12.35 The most appropriate approach will vary depending on site specific circumstances and local priorities. For Worcestershire the local priorities are set out in the River Severn Catchment Flood Management Plan (RSCFMP). This is one of 77 Catchment Flood Management Plans for England and Wales.

12.36 The role of the River Severn Catchment Flood Management Plan is to establish flood risk management policies which will deliver sustainable flood risk management for the long term. It targets the Environment Agency's limited resources to areas where the risks are greatest and gives other bodies direction on the approach which should be applied in each area by identifying flood risk management policies in the catchment. These are:

- **Policy 1** - Areas of little or no flood risk where the Environment Agency will continue to monitor and advise
- **Policy 2** - Areas of low to moderate flood risk where the Environment Agency can generally reduce existing flood risk management actions
- **Policy 3** - Areas of low to moderate flood risk where the Environment Agency is generally managing existing flood risk effectively
- **Policy 4** - Areas of low, moderate or high flood risk where the Environment Agency is already managing the flood risk effectively but where further actions may be needed to keep pace with climate change
- **Policy 5** - Areas of moderate to high flood risk where the Environment Agency can generally take further action to reduce flood risk
- **Policy 6** - Areas of low to moderate flood risk where the Environment Agency will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits.

60 **GWP consultants for Mineral Industry Research Organisation (April 2011) Restoring quarry voids for flood storage - Quantification of flood risk benefit and practical guidance for planning** http://www.sustainableaggregates.com/library/docs/mist/l0006_ma_7_g_1_002b.pdf

Approach to developing restoration priorities for each area of search for aggregates and the opportunity area for clay (step 3)

12.37 Each area of search and the opportunity area for clay have been considered to identify which policy area they fall into in the River Severn Catchment Flood Management Plan. This has been used to identify the level of priority that should be given to flood alleviation when developing restoration approaches, as set out in Table 15.

Table 15. Determining the level of priority to be given to flood alleviation

	Priority level
The River Severn Catchment Flood Management Plan Policy 4, 5 or 6 area	1
The River Severn Catchment Flood Management Plan Policy 3 area	2
The River Severn Catchment Flood Management Plan Policy 2 area	3
The River Severn Catchment Flood Management Plan Policy 1 area	-

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be a significant consideration in this area of search

12.38 Where the area of search spans more than one River Catchment Flood Management Plan Policy sub-area we have used the highest level RSCFMP Policy area to identify the level of priority given to flooding.

12.39 Where this method results in flood alleviation being identified as a relevant consideration for the area of search some high-level guidance is given. This is based on the more detailed information set out in the River Severn Catchment Flood Management Plan, supplemented by information about surface water flooding where this is available.

12.40 The River Severn Catchment Flood Management Plan identifies 9 sub-areas. These are areas which have similar physical characteristics, sources of flooding and levels of risk. For each of these it sets out a vision and preferred policy approach, key messages and proposed actions to implement the preferred policy. These have been used inform the restoration profile for each area of search and the opportunity area for clay. Where the area of search spans more than one of the River Catchment Flood Management Plan Policy sub-area, all of the key messages and proposed actions have been used to inform the text in the restoration profile.

Next steps

12.41 If this broad approach is supported it is likely that the information relating to flood alleviation will be expanded to make reference to the imminent Surface Water Management Plan and Local Flood Risk Management Strategy which are being developed for the county.

Approach to developing restoration priorities in the Spatial Strategy (step 4a)

Areas of search for aggregates

12.42 Figure 28 illustrates the areas of search where flood alleviation was rated as a determining factor for restoration. These are concentrated in the north of the county. These areas are in River Severn Catchment Flood Management Plan Policy sub-areas:

- 4 - "Middle Severn Corridor"
- 5 - "Telford and Black Country, Bromsgrove, Kidderminster and Coventry Cluster" and
- 8 - "Middle Avon, Tributaries, Arrow and Alne, Redditch, Rugby and Teme"

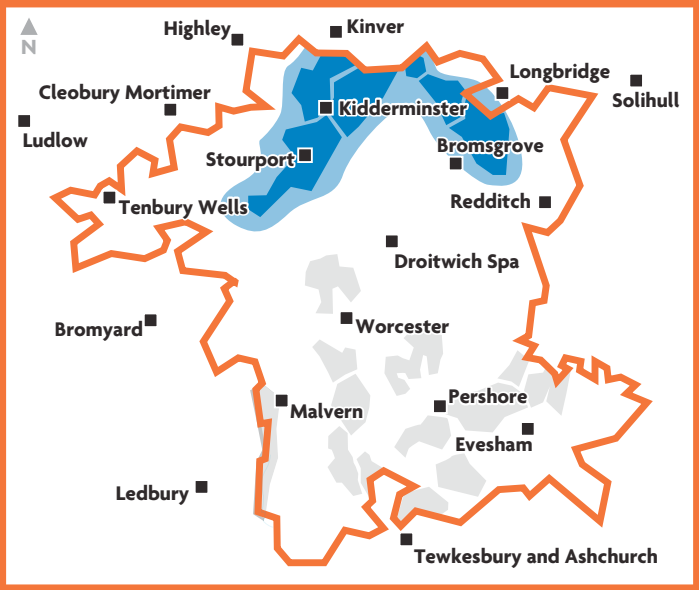
12.43 It is possible that there could be merit in considering flood alleviation in a coordinated way to identify corridors where there is potential to have a positive impact on flood alleviation. This could be an overarching priority in the Spatial Strategy and could be pursued as suggested in Figure 29.

12.44 However, the areas of search where flood alleviation is identified as a priority are for solid sand deposits. Solid sands in Worcestershire tend to be worked in deep quarries. We think that the potential for restoring these deep workings for flood alleviation is more limited than for shallower terrace and glacial sand and gravel workings, which lend themselves more easily to alternatives such as the remodelling

Figure 28. Areas of search where flood alleviation was rated as a determining factor for restoration

Legend
- Areas of Search
- Determining factor for flood alleviation

Figure 29. Corridors where flood alleviation could be identified as an over-arching principle in the Spatial Strategy.



Legend
- Areas of Search
- Determining factor for flood alleviation
- Potential for flood alleviation as an over-arching restoration priority

of water courses or increasing flood storage capacity in the flood plain. In addition, in Worcestershire, solid sand deposits tend to extend below the water table and could impact on source protection zones; introducing surface water storage in these areas may lead to an increased risk of contamination to ground water.

12.45 We are therefore not confident that mineral site restoration in these areas would have significant potential to deliver meaningful benefits for flood alleviation. We intend to discuss this further with the Environment Agency. In the meantime we will retain flood alleviation as a determining factor in these areas of search as it may be appropriate on a site-by-site basis but we do not propose to make it an over-arching priority in the Spatial Strategy unless the issues regarding the delivery of this priority in solid sand areas of search can be resolved.

Opportunity areas for clay

12.46 Flood alleviation was identified as a determining factor across the opportunity area for clay. Although restoration of clay workings could deliver meaningful benefits for flood alleviation in some areas, the opportunity area covers a significant proportion of the county and we do not think that identifying flood alleviation as an over-arching priority would be useful at this scale.

Habitat quality and fragmentation

Context

12.47 The Government has made a commitment to halting the decline in biodiversity and national policy[61] suggests that this can be aided by establishing coherent ecological networks that are more resilient to current and future pressures.

12.48 Mineral site restoration poses a unique opportunity to contribute at a landscape scale towards Biodiversity Action Plan targets; providing a net-gain in biodiversity and improving the coherence and resilience of ecological networks, enabling wildlife to

61 National Planning Policy Framework, paragraph 109

respond to a range of environmental pressures. Establishing a coherent and resilient ecological network capable of contributing to the ecosystem demands of our growing population is an essential element in halting and reversing biodiversity loss.

12.49 To identify the quality of habitat networks in the county, analysis has been undertaken of the known networks of ancient woodland, grasslands, heathland, veteran tree distribution and ancient countryside in Worcestershire to produce a Biodiversity Basemap. This was designed for use in grading the value of land for biodiversity at a sub-regional scale, and this information has been used as an indication of "biodiversity quality" across the county.

12.50 However the Biodiversity Basemap analysis did not consider boundary features such as hedgerows and verges, which form the links and connections between the patchwork of habitats that they enclose. Where boundary features are degraded this leads to significant landscape and habitat fragmentation. An alternative method has been used to assess these features; an analysis of "boundary condition" was undertaken to inform the county's Landscape Character Assessment. This information indicates the level of landscape fragmentation across the county, but as most boundary features in Worcestershire consist of hedgerows or other natural features that form wildlife corridors it is also a useful indicator of habitat fragmentation.

Approach to developing restoration priorities for each area of search for aggregates and the opportunity area for clay (step 3)

12.51 Each area of search and the opportunity area for clay have been considered to identify the biodiversity quality of the area and landscape fragmentation (used as a proxy for habitat fragmentation) based on the following divisions:

Biodiversity quality:

- High: More than ¾ of the area of search classified as high or medium quality OR more than ¼ of the area of search classified as high quality.
- Medium: More than ¼ of the area of search classified as high and/or medium quality combined EXCEPT where more than ¼ of the area of search is classified as high quality
- Low: Less than ¼ of the area of search classified as high or medium quality.

Landscape fragmentation:

- Low: More than ¾ of the area of search classified as low or medium fragmentation OR more than ¼ of the area of search classified as low fragmentation
- Medium: More than ¼ of the area of search classified as low and/or medium fragmentation combined EXCEPT where more than ¼ of the area of search is classified as low fragmentation
- High: Less than ¼ of the area of search classified as low or medium fragmentation.

12.52 They were then rated as set out in Table 16.

Table 16. Determining the level of priority to be given to habitat quality and fragmentation

		Biodiversity quality		
		High	Medium	Low
Landscape fragmentation	Low	1	2	2
	Medium	2	2	3
	High	2	3	3

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be a significant consideration in this area of search

12.53 The levels of priority in this case can be interpreted as follows:

- **Determining factor:** the area has high existing biodiversity value and contributes significantly to connectivity for habitats and species within the landscape. Biodiversity should be a determining factor in restoration plans to ensure that this value and connectivity is restored and enhanced.

  Extensive areas of heathland, grassland, woodland or wetland (or a combination) should be restored or created as appropriate, depending on the location and the potential contribution to buffering and connectivity between any nearby sites of conservation value. Public access, if any, should be designed in order to minimise disturbance and damage. Future management should be focused on maximising biodiversity.

- **Significant component:** the area has reasonable or good existing biodiversity value and low to medium levels of landscape fragmentation. Biodiversity should be a significant component of restoration plans to enhance value and connectivity. Alongside providing for the needs of other end uses (e.g. recreation) areas of heathland, grassland, woodland or wetland should be restored or created as appropriate, depending on the location and contribution to buffering and connectivity between any nearby sites of conservation value.

- **Integrate wherever possible:** the area has comparatively low existing biodiversity value and/or poor landscape connectivity. Features of high value that do exist should be retained or restored and habitat creation should be a component of all restoration plans to promote connectivity for biodiversity as part of a matrix of other end uses. In an agricultural context features could include hedgerows, hedgerow trees, arable field margins, watercourse buffer strips, ponds and native woodland with attention paid to where the siting of features can restore or enhance landscape connectivity for species.

12.54 Biodiversity priorities have been identified across the county in the Worcestershire Green Infrastructure Strategy (WGIS) and these have been used inform the restoration profile for each area of search. The restoration profiles also highlight the priorities for the Biodiversity Delivery Areas in the county which have been identified by the Worcestershire Biodiversity Partnership as likely to have the most strategically beneficial effect at a county level.

Next steps

12.55 If this broad approach is supported it is likely that the information relating to habitat quality and fragmentation will be refined to consider each area of search in more detail. This might include refining the methodology, identifying existing assets and making reference to the potential for different priority habitats in each area of search.

Approach to developing restoration priorities in the Spatial Strategy (step 4a)

Areas of search for aggregates

Figure 30. Areas of search where habitat quality and fragmentation was rated as a determining factor for restoration

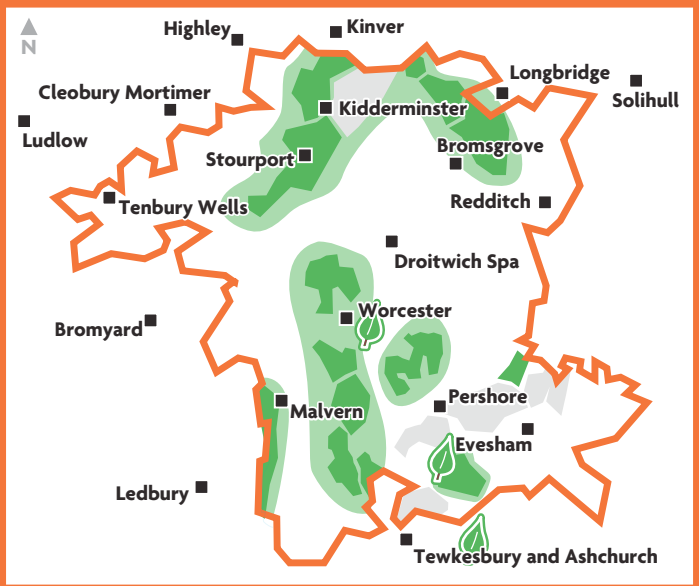
Legend
Areas of Search
Determining factor for habitat quality and fragmentation.

12.56 Figure 30 illustrates the areas of search where habitat fragmentation and quality was rated

as a determining factor for restoration. This was widespread across the county, with the exception of three areas of search in the Avon Corridor and one area of search in the Stour Corridor

12.57 Enhancing wildlife corridors and linking and buffering existing assets are encouraged through the Natural Environment White Paper and are widely supported in national policy. In order to maximise the benefits restoration schemes could achieve we have used the idea of corridors based on physical features such as watercourses, the underlying geology and common elements of landscape character to identify where we think restoration schemes have the greatest potential to benefit habitat quality and reduce landscape fragmentation. The 6 areas illustrated in Figure 31 are where we propose habitat quality and fragmentation should be an overarching priority in the Spatial Strategy.

Figure 31. Corridors where habitat quality and fragmentation is an over-arching principle in the Spatial Strategy.



Legend

- Areas of Search
- Determining factor for habitat quality and fragmentation.
- Habitat quality and fragmentation as an over-arching priotity
- Special Area of Conservation (SAC)

12.58 These corridors are:

- **The Junction 4a corridor** - habitat quality and fragmentation is identified as a determining factor in the three areas of search in the Junction 4a corridor. These areas are unified by the underlying sandy geology and have a coherent landscape character along the length of the corridor, with Principal Settled Farmlands across much of the area and the Wooded Hills and Farmlands of the Clent and Lickey Hills on the northern side of the corridor.
- **The Stour corridor** - the three areas of search in the Stour corridor are unified by the underlying sandy geology and the course of the River Stour. Although habitat quality and fragmentation is identified as a significant component rather than a determining factor in one of the areas of search, the geological similarities, coherent landscape type (Sandstone Estatelands) and proximity to the river as a linking feature mean that we think there is justification for it to be encompassed by the overarching priority in this area.
- **The River Severn corridor** - the Worcestershire Green Infrastructure Framework promotes the creation and enhancement of priority habitats along the River Severn corridor, to take advantage of the current and potential role the river plays in habitat connectivity. The five areas of search along the River Severn provide significant opportunities to deliver these aims and develop complimentary habitats and ecological networks linked by the river. This is supported by the general landscape character coherence across these areas (predominantly Settled Farmlands and Riverside Meadows).
- **Bow Brook to Wadborough area** - this is an area of search for terrace and glacial sand and gravel, with the potential to link, buffer and create ecological networks. The area of search crosses through the centre of the Bow Brook Biodiversity Delivery Area (BDA) and could play a key role in enhancing connectivity across this BDA.
- **The Malvern Hills** - this is an area of search for crushed rock. The coherent geology and

landscape type (High Hills and Slopes) of this area means that it forms a natural basis for developing coherent ecological corridors.

- **Bredon Hill** - this is an area of search for crushed rock. The geology and isolated nature of this area represent an opportunity to buffer and extend existing habitats including the ecological features that the Bredon Hill SAC, SSSIs and Local Wildlife Sites in this area were designated for.

12.59 We have not identified habitat quality and fragmentation as an over-arching priority for The Avon Corridor: Lenches area of search as we think that this area alone would not represent a meaningful "corridor".

The opportunity area for clay

12.60 Habitat quality and fragmentation was not identified as a determining factor for the opportunity area for clay, but was identified as a significant component. We do not think that identifying habitat quality and fragmentation as an over-arching priority would be useful at this scale, as the opportunity area covers a significant proportion of the county with varying quality.

Water quality

Context

12.61 Water quality is an important consideration on a larger-than-national level. The European Water Framework Directive (WFD) came into force in December 2000 and became part of UK law in December 2003. This Directive seeks to protect and enhance the quality of:

- surface freshwater (including lakes, streams and rivers)
- groundwaters
- groundwater dependant ecosystems
- estuaries
- coastal waters out to one mile from low-water

Many of the water bodies in England and Wales have been assessed to see how they comply with this directive and have been given a Water Framework Directive status.

12.62 A water body is assessed against over 30 different parameters which are in turn grouped into:

- **Ecological Status** including biological elements such as fish and insect life, hydromorphological and physio-chemical elements such as phosphorus, temperature, dissolved oxygen and pH. Ecological status is measured on the scale of high, good, moderate, poor or bad.
- **Chemical Status** covering 'priority substances' such as Mercury and Benzene. Chemical status is measured as good or fail. Some water courses do not require assessment for chemical status.

12.63 Many of the water bodies assessed in Worcestershire fail on one or more of these elements. Smaller water bodies are not considered by the assessment regime.

12.64 Where mineral workings are in proximity to waterbodies there may be restoration options that have the potential for providing water quality benefits. This could include providing a buffer strip between water bodies and potential sources of pollution or creating features such as settlement ponds. Where this is coupled with significant flood alleviation schemes or the re-modelling of water courses there may also be potential to include features such as de-canalising the water course or providing fish refuges, which can contribute to improvements in freshwater biodiversity.[62]

Approach to developing restoration priorities for each area of search for aggregates and the opportunity area for clay (step 3)

12.65 Each area of search and the opportunity area for clay have been considered to identify whether they contain any water bodies assessed against the Water Framework Directive criteria. Where they do, the performance of the water courses has been considered to identify the level of priority that should be given to water quality when developing restoration approaches, as set out in Table 17.

62 **GWP consultants for Mineral Industry Research Organisation (April 2011) Restoring quarry voids for flood storage - Quantification of flood risk benefit and practical guidance for planning** http://www.sustainableaggregates.com/library/docs/mist/l0006_ma_7_g_1_002b.pdf

Table 17. Determining the level of priority to be given to water quality

		Chemical Status of water bodies within area of search		
		Fail	Good	Not required
Ecological Status of water bodies within area of search	Bad or Poor	1	1	1
	Moderate	1	2	2
	Good	2	3	3
	High	3	-	-
	No WFD water bodies in area of search	-	-	-

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be significant in this area of search

12.66 Where there is more than one WFD water body in the area of search, or in the opportunity area for clay, the worst performing water body for each indicator will be used to identify the level of priority given to water quality.

Next steps

12.67 Where this method results in water quality being identified as a relevant consideration, we would like to give some high-level guidance. We are aware that the Environment Agency is working on Water Improvement Plans and Water Action Plans to implement the objectives of the Water Framework Directive and hope that this will be useful in helping us develop this guidance.

12.68 However these are not currently available. If they are completed during the preparation of the Minerals Local Plan we will consider opportunities to take them into account in establishing priorities and developing the area of search restoration profiles.

Approach to developing restoration priorities in the Spatial Strategy (step 4a)

Areas of search for aggregates

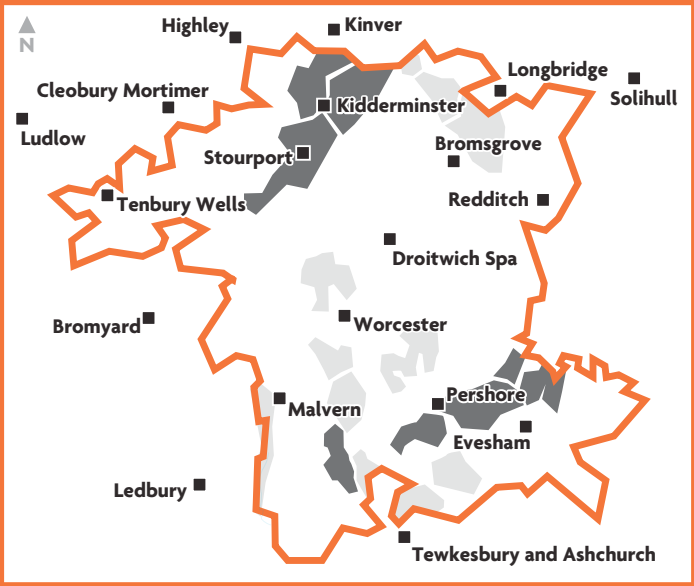
12.69 Figure 32 illustrates the areas of search where water quality was rated as a determining factor for restoration. This included one area of search in the Lower Severn Corridor but was mainly concentrated in the areas of search in the Avon Corridor and the areas of search in the Stour Corridor.

12.70 There is significant potential for cumulative efforts to improve water quality to have a positive impact, particularly where this will contribute towards improving water quality along a specific water course and its tributaries.

12.71 We have identified the areas of the county where we think that water quality should be an overarching priority in the spatial strategy (Figure 33):

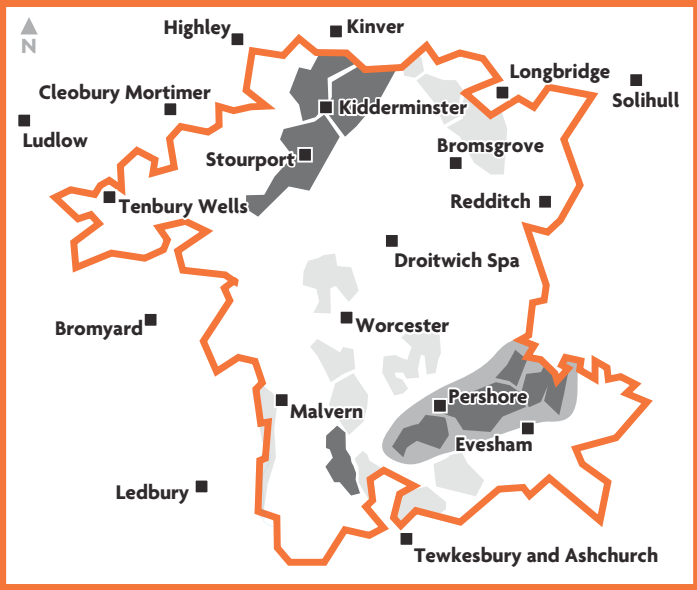
- **Avon Corridor:** In these areas of search many of the resource areas are in close proximity to water courses and measures incorporated through site restoration could be effective in reducing diffuse pollution entering the water courses, particularly where they are in agricultural areas.

Figure 32. Areas of search where water quality was rated as a determining factor for restoration



Legend
- Areas of Search
- Determining factor for water quality

Figure 33. Corridors where water quality is an over-arching principle in the Spatial Strategy.



Legend
- Areas of Search
- Determining factor for water quality
- Water quality as an over-arching priotity

12.72 We have not identified water quality as an over-arching priority in the Spatial Strategy for the areas of search in the Stour Corridor as there is not a strong relationship between the resource areas and their proximity to water courses, in many cases the water courses considered are on the periphery of the areas of search. In addition the potential to use the restoration of workings in these areas to re-model water courses is small (see flood alleviation) and impacts on biological water quality are therefore limited. So whilst this is still capable of being a determining factor on sites that could have a direct impact on water quality it is not considered to be an over-arching priority in this area.

The opportunity area for clay

12.73 Across this opportunity area, 6 of the 32 watercourses do not achieve a satisfactory standard: 2 significant rivers (the River Teme and the River Arrow) fail on chemical status, and 4 watercourses are designated as having bad or poor ecological quality.

12.74 These watercourses are distributed across the opportunity area, and measures incorporated through site restoration could contribute to improving water quality in some areas. However, the opportunity area covers a significant proportion of the county and we do not think that, given the current nature and limited extent of clay workings in the county, identifying water quality as an over-arching priority would be useful at this scale.

Geodiversity

Context

12.75 There are 13 geological SSSIs and more than 90 Local Geological Sites in the county, many of which have been exposed as a result of mineral working. Any mineral working has the potential to reveal interesting geological exposures which would benefit from study or preservation.

12.76 It is difficult to predict where such exposures will arise. The focus in setting restoration priorities is therefore based on identifying

broad locations where further exposures will add to a coherent understanding of geological assets across a localised area, by building on the network of existing assets. The areas where we think this approach has the greatest potential are:

- The Malvern Hills Area of Outstanding Natural Beauty and The Abberley and Malvern Hills Geopark (which have overlapping boundaries) and
- The Cotswolds Area of Outstanding Natural Beauty.

12.77 The Abberley and Malvern Hills Geopark is one of 10 Geoparks in the UK. A Geopark must comprise a certain number of geological sites of particular importance in terms of their scientific quality, rarity, aesthetic appeal or educational value. Geodiversity is also important in the Malvern Hills Area of Outstanding Natural Beauty with the Special Qualities of the AONB including "a distinctive and varied geology, with a mixture of granite, limestone, sandstones and marls"[63].

12.78 The 'Special Qualities' of the Cotswolds Area of Outstanding Natural Beauty also relate to it geodiversity as "the area is a rich mosaic of historical, social, economic, cultural, geological, geomorphological and ecological features". The Cotswolds Area of Outstanding Natural Beauty Management Plan 2013-18 expresses the aspiration to enter into discussions regarding the suitability of the Cotswolds Area of Outstanding Natural Beauty for a Global Geopark or similar geo-conservation initiative.

Approach to developing restoration priorities for each area of search for aggregates and the opportunity area for clay (step 3)

12.79 Each area of search and the opportunity area for clay have been considered to identify whether they are within the Abberley and Malvern Hills Geopark or Malvern Hills or Cotswolds Area of Outstanding Natural Beauty. The proximity of the area to identified geodiversity assets has also been considered to identify the level of priority that should be given to geodiversity when developing restoration approaches, as set out in Table 18. In some cases the area of search will fall into more than one of the categories below. In these cases we will use the highest level of priority identified.

Table 18. Determining the level of priority to be given to geodiversity

	Priority level
Area of search in or partially within the Cotswolds or Malvern Hills Area of Outstanding Natural Beauty	1
Area of search in or partially within the Abberley and Malvern Hills Geopark	1
Area of search contains a geological SSSI or local geological site	2
Area of Search within 1km of geological SSSI or 500m of local geological site	3
Area of Search not in the Abberley and Malvern Hills Geopark and further than 1km from geological SSSI or 500m of local geological site	-

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be significant in this area of search

12.80 The way in which geodiversity considerations can be incorporated into restoration will vary significantly depending on the nature and location of the features. It has therefore not been possible to give any high-level guidance in the restoration profiles at this stage. There will need to be flexibility in restoration plans to incorporate any unforeseen features of significance.

Approach to developing restoration priorities in the Spatial Strategy (step 4a)

12.81 Figure 34 illustrates the areas of search where geodiversity was rated as a determining factor for restoration. This is wide-spread across the west of the county and includes Bredon Hill. Geodiversity was also rated as a determining factor for the opportunity area for clay, as the western edge is within the Abberley and Malvern Hills Geopark.

63 Malvern Hills Area of Outstanding Natural Beauty Management Plan 2009-2014

Figure 34. Areas of search where geodiversity was rated as a determining factor for restoration

Legend
- Areas of Search
- Determining factor for geodiversity

Figure 35. Corridors where geodiversity is an over-arching principle in the Spatial Strategy

Legend
- Areas of Search
- Determining factor for geodiversity
- Area of Outstanding Natural Beauty
- Abberley and Malvern Hills Geopark

12.82 As geological features could be exposed at any mineral working we do not think it is appropriate to identify geodiversity as an over-arching priority for particular areas of search or for the opportunity area for clay. Instead, we have taken the approach that it is more important to contribute to a coherent understanding of geological assets across a localised area, and build on the network of existing assets.

12.83 For this reason we have identified the Abberley and Malvern Hills Geopark, the Cotswolds Area of Outstanding Natural Beauty and the Malvern Hills Area of Outstanding Natural Beauty in the Spatial Strategy as the areas which offer the greatest opportunities to enhance current corridors of geological and geomorphological features in the county.

Horticulture and food production

Context

12.84 Agricultural land quality is an important consideration in national policy, which says that "local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality"[64], and that "in preparing Local Plans, local planning authorities should... put in place policies to ensure worked land is reclaimed at the earliest opportunity... and that high quality restoration and aftercare of mineral sites takes place, including for agriculture (safeguarding the long term potential of best and most versatile agricultural land and conserving soil resources)..."[65].

12.85 The quality of agricultural land is based on the agricultural land classification which identifies five grades. Grade 1 land is of excellent quality and Grade 5 land is of very poor quality. Grade 3, which constitutes about half of the agricultural land in England and Wales, is divided into two subgrades designated 3a and 3b. However Natural England is not able to provide digital records of which land falls into sub category 3a and which falls into sub-category 3b.

64 National Planning Policy Framework, paragraph 112
65 National Planning Policy Framework, paragraph 142

12.86 Over 80% of Worcestershire is categorised as having high quality agricultural land. This means that there is significant cross-over between the location of mineral resources and high-grade land. Where restoring land for horticulture or food production is considered throughout all phases of the life of a minerals site, there is potential for the restoration to contribute to conserving high quality soil resources and safeguarding the long term potential of best and most versatile agricultural land by:

- stripping and storing soils in line with best practice guidance,
- reinstating the original soil asset where possible,
- concentrating high quality soil resources in restoring some parts of the site to high grade agricultural land and delivering low intensity grazing or wetland habitats in parts of the site with lower soil quality or where the lowered land level following mineral extraction does not allow for restoration of the entire area to high quality agricultural land.

There is also significant potential for restoration for horticulture and food production to integrate the delivery of a range of other high-level restoration priorities and this is often standard practice where agri-environmental schemes such as higher-level stewardship are in place.

Approach to developing restoration priorities for each area of search for aggregates and the opportunity area for clay (step 3)

12.87 Each area of search and the opportunity area for clay have been considered to identify the agricultural land quality of the area. The proportion of high quality agricultural land (Grade 1 and 2) has been used to derive the priority level to be given to horticulture and food production, as set out in Table 19. Grade 3a agricultural land is also considered to be high quality, but there is no data available to identify which land is grade 3a and which is grade 3b so we have not been able to consider grade 3a land in this method.

Table 19. Determining the level of priority to be given to horticulture and food production

Agricultural land	Priority level
More than ½ of the area of search classified as grade 1 or 2	1
½ - 1/4 of the area of search classified as grade 1 or 2	2
Less than 1/4 grade of the area of search classified as grade 1 or 2	3
None of the area of search classified as grade 1 or 2	-

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be significant in this area of search

Next steps

12.88 Horticulture and food production can be very varied in nature. If this approach is supported through consultation, further consideration could be given to the type of horticulture and food production that would be most compatible in relation to the landscape character of the area. This might distinguish between arable farming, pasture and orchards and could include guidance on the appropriate nature and pattern of field boundaries.

12.89 In addition, within the Severn and Avon Vales Biodiversity Delivery Area there is an aim to "Restore the functionality of biodiversity value of the wetland/floodplain ecosystem and demonstrate cost effective delivery of Water Framework Directive objectives through targeting: reversion of arable land to wet grassland; creation of new wetland habitat including reedbed, fen marsh and ditch networks; promoting and supporting low-intensity grazing systems." It may also be appropriate to consider how this could influence restoration schemes in this Biodiversity Delivery Area.

Approach to developing restoration priorities in the Spatial Strategy (step 4a)

Areas of search for aggregates

12.90 Figure 36 illustrates the areas of search where horticulture and food production was rated as a determining factor for restoration. This is concentrated in the terrace and glacial sand and gravels found along the river valleys in the south of the county.

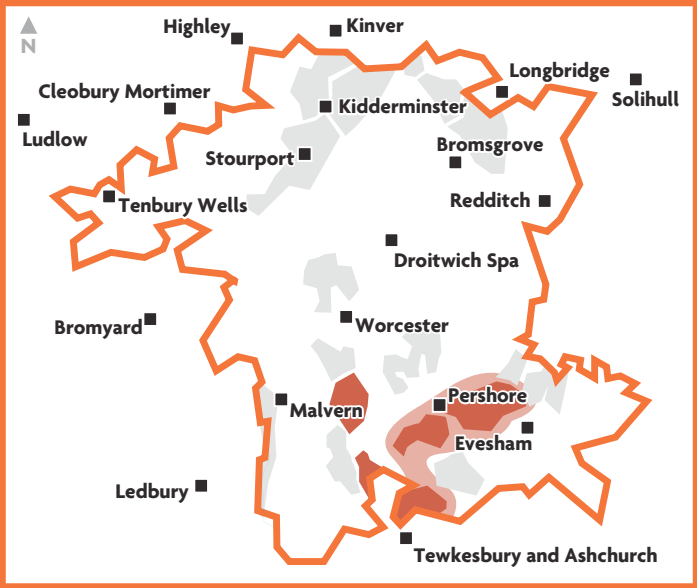
Figure 36. Areas of search where horticulture and food production was rated as a determining factor for restoration

Legend
- Areas of Search
- Determining factor for horticulture and food production

12.91 We have identified an arc of areas of search where we think it would be appropriate for agriculture to be an over-arching priority in the spatial strategy, shown in Figure 37. This includes the Carrant Brook Corridor, where some restoration to agriculture has already taken place, and the Avon Corridor: West and Avon Corridor: Central areas of search, which are located in the Vale of Evesham where horticulture and farming is acknowledged as a locally distinctive characteristic[66].

66 South Worcestershire Development Plan, Track Changed Version of the Proposed Submission Document, May 2013

Figure 37. Corridors where horticulture and food production is an over-arching principle in the Spatial Strategy.



Legend
- Areas of Search
- Determining factor for horticulture and food production
- Horticulture and food productionas an over-arching priority

12.92 In the case of the Avon Corridor areas of search, this overlaps with water quality as an overarching priority. We consider these two aspects to be compatible where provisions to maintain or enhance water quality are integrated into the wider design of the restoration scheme.

12.93 We have not identified horticulture and food production as an over-arching priority for the Lower Severn Corridor: Central or Lower Severn Corridor West because we think that although horticulture and food production can be integrated with habitat quality and fragmentation on a site by site basis, identifying agriculture as an overarching priority that cuts across the River Severn corridor could risk diluting the benefits that come from augmenting habitat quality and fragmentation around this feature.

The opportunity area for clay

12.94 Clay soils do not tend to be of the highest agricultural quality. Almost all of this opportunity area is classified as grade 3 land with some dispersed areas of higher quality land. Horticulture and food production is therefore rated as "integrate where possible" in the opportunity area. In addition, the opportunity area covers a significant proportion of the county and we do not think that identifying horticulture and food production as an over-arching priority would be useful at this scale.

Historic Environment

Context

12.95 National policy[67] says that "local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites and within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably." National policy[68] also says that "Local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment... In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance."

12.96 It is necessary to understand historic environment potential in order to provide a context for assessing conservation and restoration opportunities. The Historic Environment Assessment (HEA) produced originally for District Authorities in Worcestershire (except Wyre Forest) provides a strategic assessment of a range of issues including historic environment potential. The Historic Environment Assessment undertakes this assessment for different Historic Environment Character Zones.

12.97 Historic Environment potential is an assessment of the likelihood for the presence of heritage assets[69] based on historic environment character and the assemblage of historic assets that are already recorded within each Historic Environment Character Zone. This is measured in relation to the dominant land use within each of the Historic Environment Character Zones.

12.98 Historic Environment Character Zones have been categorised into:

- High potential – A range of high quality assets probably survive in the zone due to a lack of heavy impact
- Medium potential – Some existing impact from development, long-term arable land-use or limited known historic assets due to a lack of investigation
- Low or unknown potential – Existing widespread impact from development, or quarrying, or potential is unknown due to a low density of records

12.99 The assessment of historic environment potential is logically linked with survival; where there is good survival then the presence of additional features can be forecasted with reasonable confidence. However, high potential can also be estimated in zones where impact on the landscape from (for example) development or intensive farming is less evident.

12.100 Historic environment potential has to be understood relative to its context. Areas that have an intact historic field pattern cannot produce more boundaries and hedgerows. However, by contrast, the deep alluvial deposits associated with river corridors and palaeo-channels preserve ancient environmental materials, organic artefacts and structures, and multi-period features sealed beneath the upper alluvial layers. These are not visible on the surface, but are highly susceptible to impact from deep excavations.

67 National Planning Policy Framework, paragraph 137.

68 National Planning Policy Framework, paragraph 126.

69 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 asset includes designated heritage assets and assets identified by the local planning authority (including local listing). Source: NPPF, Annex 2, 52

12.101 The restoration of mineral workings could deliver historic environment benefits through:

- Conserving designated and undesignated historic assets identified as significant and their setting.
- Taking into account and improving the understanding of the archaeological potential of an area.
- Delivering enhancements that sustain and where possible better reveal the significance of heritage assets and their setting.
- Promoting the sustainable management of heritage assets and their setting identified as being at risk.
- Exploring opportunities to re-use, integrate and improve the management of heritage assets in support of water quality and flood risk mitigation.
- Encouraging the engagement with and understanding of heritage assets through improved access and promotion to the public.

Approach to developing restoration priorities for each area of search for aggregates and the opportunity area for clay (step 3)

12.102 Each area of search and the opportunity area for clay have been considered to identify the level of priority that should be given to the historic environment. The proportion of the area with high potential has been considered to derive the priority level to be given, as set out in Table 20.

12.103 Due to a lack of comparable information, opportunities for historic environment potential cannot be assessed for the Wyre Forest District. Within this district a precautionary approach has been applied and it will be assumed that potential is high unless there is evidence to the contrary.

Table 20. Determining the level of priority to be given to historic environment

Potential for the presence of heritage assets	Priority level
More than ½ of the area of search identified as high potential	1
½ to ¼ of the area of search identified as high potential	2
Less than ¼ of the area of search identified as high potential	3
Potential not known (Wyre Forest District only)	1

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be significant in this area of search

Next steps

12.104 This method assesses the Historic Environment potential of an area in terms of the likelihood for the presence of historic assets. We would like to develop this method further to assess the potential gains from the restoration of mineral workings. This could take into account the opportunities to enhance the setting of heritage assets or to enhance the legibility and interpretation of the historic landscape character.

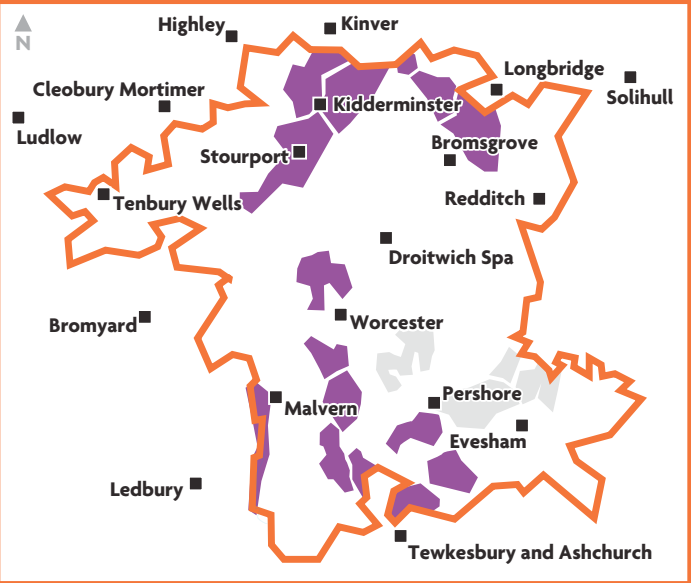
12.105 It may also be appropriate to identify both known and potential heritage assets in the area of search in more detail and give guidance about how restoration in each area of search could best enhance these features.

Approach to developing restoration priorities in the Spatial Strategy (step 4a)

Areas of search for aggregates

12.106 Figure 38 illustrates the areas of search where the historic environment was rated as a determining factor for restoration. This is widespread across the county.

Figure 38. Areas of search where the historic environment is rated as a determining factor for restoration



12.107 We have not identified the historic environment as an over-arching priority for any area of the county in the spatial strategy because at this stage it has not been possible to identify meaningful and coherent corridors.

12.108 We think that this method needs to be further refined and we will endeavour to work with the Council's Archive and Archaeology Service and English Heritage to establish an appropriate approach.

The opportunity area for clay

12.109 The historic environment was rated as a determining factor for the opportunity area. The opportunity area covers a significant proportion of the county and we do not think that identifying the historic environment as an over-arching priority would be useful at this scale.

Access and recreation

Context

12.110 Access and recreation plays a key role in the continued social, environmental and economic wellbeing of the county. In the 2009 Worcestershire Citizen's panel view point survey, 93% of residents classed parks and open spaces as either "important" or "very important". It is estimated that 10 million visitors came to Worcestershire in 2004, with the natural environment being one of the county's main attractions and contributions to the visitor economy, particularly high profile areas such as the Malvern Hills.

12.111 There are over 11,750 ha of publically accessible natural green spaces in Worcestershire and over 7000 public rights of way[70]. However the ability of residents to access these recreation sites varies across the county. Worcestershire GI Framework Document 3[71] undertakes an Accessible Natural Green Space Standard (ANGSt) analysis of recreation assets in Worcestershire. The ANGSt methodology developed by Natural England, includes a target for residents to have the following levels of provision:

- Sub-regional scale provision: within 10km of sites over 500ha
- County scale provision: within 5km of sites over 100ha
- District scale provision: within 2km of sites over 20ha
- Neighbourhood scale provision: within 300m of sites over 2ha

12.112 Overall 55.2% of Worcestershire residents are within 5km of sites that are 100ha or larger (county-scale sites) and 31.8% are within 10km of sites that are 500ha or larger (sub-regional scale sites). This falls short of the Natural England Target of 100% for each of these categories. However performance against these targets varies considerably in different districts.

12.113 Worcestershire GI Framework Document 3 also considers the capacity of existing assets, the ANGSt analysis and future development pressures to identify the need for new recreation assets and identifies potential areas of search for recreation sites. With future development pressures, all recreational assets within the county are expected to face increased development pressure. There is potential to change management practices to increase the capacity of some facilities, such as Arrow Valley Country Park in Redditch Borough

70 Worcestershire County Council, 2012.

71 Available at www.worcestershire.gov.uk/GI

and the Wyre Forest, to absorb additional visitors, however there is little potential to increase the capacity of other assets in the county such as the Malvern Hills. Given the limited opportunity which appears to be available to expand existing sites, it is likely that new informal recreation facilities will be required. The Framework Document therefore identifies "areas of search" for new informal recreation sites. Some of these have been taken forward in emerging planning policy.

Approach to developing restoration priorities for each area of search for aggregates and the opportunity area for clay (step 3)

12.114 Each area of search and the opportunity area for clay have been considered to identify the level of priority that should be given to access and recreation. This has been largely based on the information in Worcestershire GI Framework Document 3, particularly the presence of "areas of search" for recreation, and has considered the performance of the district which the area of search is within against the ANGSt target for "District scale provision" (households with 2km of sites over 20ha).

Table 21. Determining the level of priority to be given to access and recreation

	Priority level
Part of the minerals area of search identified as area of search for recreation in adopted or emerging local plan	1
Part of the minerals area of search identified as area of search for recreation in Worcestershire GI Strategy	1
Minerals area of search is in an area where less than 75% of households meet ANGSt standards for district scale provision	2
In area where more than 75% of households meet ANGSt standards for district scale provision and no areas of search for recreation have been identified.	3

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be significant in this area of search

Next steps

12.115 This method has been developed to focus on district scale provision, as this is a scale of site that is compatible with the size of most of the resource areas identified. It has also considered large scale provision within "areas of search" for recreation facilities.

12.116 However there may be scope to consider recreation provision on a wider range of scales, including neighbourhood scale sites where they are in close proximity to communities or the creation or enhancement of public rights of way and long-distance routes. In addition the method currently only considers the assessment of free-to-access natural spaces and consideration of other leisure facilities or commercial enterprises may be appropriate.

Approach to developing restoration priorities in the Spatial Strategy (step 4a)

Areas of search for aggregates

12.117 Figure 39 illustrates the areas where access and recreation was rated as a determining factor for restoration.

Figure 39. Areas of search where access and recreation is rated as a determining factor for restoration

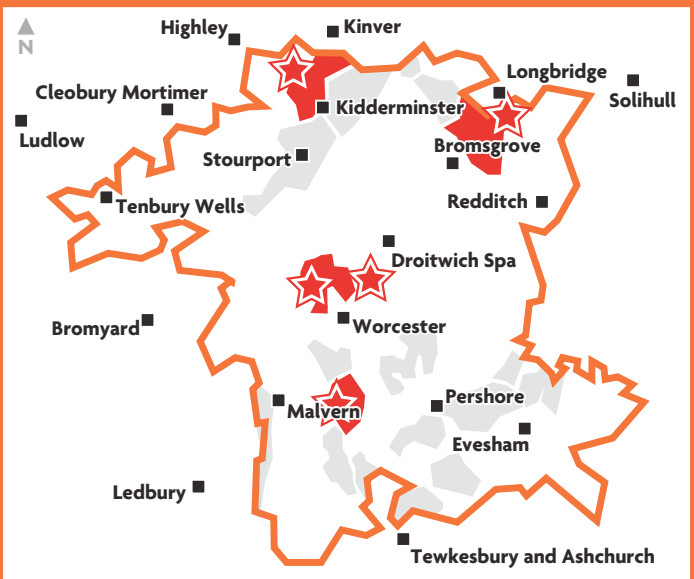
Legend

Areas of Search

Determining factor for access and recreation

Retreat Farm sand and gravel working near Grimley

Figure 40. Indicative points where access and recreation is an over-arching principle in the Spatial Strategy



Legend

- Areas of Search
- Determining factor for access and recreation
- "Areas of Search" for informal recreation

12.118 As these areas correlate with the "areas of search" identified for informal recreation sites identified in GI Framework Document 3 and emerging Local Plans, we have identified these as indicative points to show where access and recreation is an over-arching priority (Figure 40), rather than identify "corridors" for access and recreation on the spatial strategy.

The opportunity area for clay

12.119 Access and recreation was rated as a determining factor for the opportunity area, correlating with the "areas of search" identified for informal recreation sites identified in GI Framework Document 3 and emerging Local Plans. We have identified these as indicative points on the spatial strategy.

Summary of restoration priorities for each area of search for aggregates and the opportunity area for clay (step 3)

12.120 Profiles for each area of search are given in Appendix 2 and for the opportunity area for clay in Appendix 3. A summary of the level of priority given to each of the high-level strategic priorities in each area of search and the opportunity area is set out in Table 22 and maps showing the distribution of these priorities are given in Appendix 4.

Table 22. Summary of the level of priority to be given to high-level restoration priorities in each area of search

Area of Search	Flood alleviation	Habitat quality and fragmentation	Water quality	Geodiversity	Horticulture and food production	Historic environment	Access and recreation
Terrace and glacial sand and gravel							
Avon Corridor: Central	2	2	1	-	1	2	2
Avon Corridor: East	2	2	1	-	2	2	2
Avon Corridor: Lenches	2	1	1	-	2	3	2
Avon Corridor: West	2	2	1	3	1	1	2
Bow Brook to Wadborough	2	1	2	-	2	2	2
Upper Severn	2	1	2	1	2	1	1
Lower Severn Corridor: Central	3	1	2	1	1	1	1
Lower Severn Corridor: North	3	1	2	1	2	1	3
Lower Severn Corridor: South East	3	1	2	1	1	1	3
Lower Severn Corridor: South West	3	1	1	1	2	1	3
Carrant Brook Corridor	2	2	2	1	1	1	2
Solid sand							
Junction 4a: Central	1	1	2	3	3	1	1
Junction 4a: North	1	1	2	-	2	1	2
Junction 4a: South	1	1	2	2	2	1	1
Stour Corridor Sandstone: Central	1	2	1	3	2	1	3
Stour Corridor Sandstone: South	1	1	1	1	2	1	3
Stour Corridor Sandstone: West	1	1	1	1	3	1	1
Crushed rock							
Bredon Hill	2	1	-	1	-	1	2
Malvern Hills	2	1	-	1	-	1	3
Clay							
Opportunity area for clay	1	2	1	1	3	1	1

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be significant in this area of search

Summary of restoration priorities in the Spatial Strategy (step 4a)

12.121 After each of the individual high-level restoration priorities has been considered as outlined above, we have drawn these elements together to form a "Spatial Strategy" for the county. The restoration priorities for the Spatial Strategy are shown on Figure 41. This is a composite diagram of each of the considerations set out above.

Figure 41. Spatial Strategy

Figure 7. Spatial Strategy

Legend

- Terrace and Glacial sand and gravel area of search
- Solid Sand area of search
- Crushed Rock area of search
- Clay opportunity areas

Map features

- Rivers
- County boundary

Over-arching restoration priorities

- Habitat quality and fragmentation
- Horticulture and food production
- Water Quality
- Abberley and Malvern Hills Geopark
- Area of Outstanding Natural Beauty
- Special Area of Conservation (SAC)
- "Areas of Search" for informal recreation

Driving the delivery of the restoration priorities for each area of search (step 4b)

12.122 We have already identified the high-level restoration priorities for each area of search and the opportunity area for clay and rated these as:

- The over-arching priorities identified in the spatial strategy
- Determining factors
- Significant components and
- Priorities identified to integrate into restoration wherever possible

We now need to think about how we should drive forward the delivery of these priorities through the policy framework.

12.123 We think that there are three alternative ways to drive the delivery of the restoration priorities. In summary these are:

- To develop a single set of policies that would apply to all areas of search and the opportunity area for clay,
- To develop individual policies for each area of search and the opportunity area for clay, outlining area specific issues for each one, or
- To develop a "spatial master-plan" and policies for each area of search and the opportunity area for clay, outlining and visually interpreting the area specific issues for each one.

12.124 These alternatives are outlined in Figure 42. We would like your comments on these and we have set out in Table 23 a worked example to illustrate how each of the alternatives might work in practice.

Figure 42. Alternative approaches to driving the delivery of the restoration priorities for each area of search and the opportunity area for clay

Alternative a) develop policies that require proposals to demonstrate how they have given proportionate weight to the hierarchy of considerations identified in the restoration profiles, namely:

i. The over-arching priorities identified in the spatial strategy;
ii. Determining factors;
iii. Significant components; and
iv. Priorities identified to integrate into restoration wherever possible.

This would include broad policies addressing each of the restoration priorities and factors that should be taken into account. These would not be location-specific and would need to be applied as proposals were brought forward (see below for more details).

Alternative b) develop policies for each area of search and the opportunity area for clay, outlining more location specific considerations based on:

i. The over-arching priorities identified in the spatial strategy;
ii. Determining factors;
iii. Significant components; and
iv. Priorities identified to integrate into restoration wherever possible.

This would identify key features in and around each area of search (see below for more details, please note that the worked example is fictional).

Alternative c) develop policies and a "spatial master-plan" for each area of search and the opportunity area for clay, outlining more location specific considerations for each area of search based on:

i. The over-arching priorities identified in the spatial strategy;
ii. Determining factors;
iii. Significant components; and
iv. Priorities identified to integrate into restoration wherever possible

These would identify key features in and around each area of search and might identify focus points for each consideration within the areas of search or the varying importance of issues across these areas.

(See below for more details, please note that the worked example is fictional).

For alternative a), alternative b) and alternative c) cross-cutting policies would also need to be developed to address issues such as environmental protection, aftercare, safety and amenity impacts.

12.125 In Table 23 we have set out our ideas of how we think each of the alternative approaches might develop. We have given a broad overview of each approach and used a worked example. This example is completely fictional.

Worked example for Alternative B and Alternative C

This fictional example is a terrace sand and gravel area of search close to a river. The restoration priorities for this area of search are:

Area of Search	Flood alleviation	Habitat quality and fragmentation	Water quality	Geodiversity	Horticulture and food production	Historic environment	Access and recreation
Terrace and glacial sand and gravel							
Fictional example area	2	1	2	3	1	2	1

Key to priority levels:

1 = Determining factor

2 = Significant component

3 = Integrate wherever possible

- = Not likely to be significant in this area of search

The over-arching priority identified in the Spatial Strategy for this area of search is "Habitat quality and fragmentation".

Archaeological investigation at Clifton sand and gravel working

Table 23. Worked example showing how Alternative A, Alternative B and Alternative C might be developed

Alternative A	Alternative B	Alternative C
a) Landscape Character		
Policy criteria In Alternative A, policy criteria could be developed to ensure that mineral site restoration will not have an inappropriate impact on the character and quality of the landscape and that designated landscapes are protected. Proposals should reflect the defining qualities of the particular landscape type of the area. The policies may also consider where recreating the existing landscape type is the most appropriate solution or where wholescale change is preferable.	**Policy criteria** In Alternative B, policies could be developed for each area of search and the opportunity area for clay to facilitate the delivery of restoration schemes that reflect the predominant landscape type. Policies may also consider where wholescale change is preferable. **Worked example** The predominant landscape character in this area of search is Settled Farmlands on River terrace. Restoration schemes should conserve and enhance tree cover along watercourses, seek to maintain cropping/horticultural land uses, enhance patterns of tree cover associated with settlement and conserve and enhance patterns of hedgerows.	**Policy criteria** In Alternative C, policies could be developed for each area of search and the opportunity area for clay to facilitate the delivery of restoration schemes that reflect the patchwork of landscape types. **Spatial master-plan** The "spatial master-plan" could be developed to identify any different landscape types across the area of search, or where wholescale change is preferable. **Worked example** The predominant landscape character in this area of search is Settled Farmlands on River terrace. Restoration schemes should conserve and enhance tree cover along watercourses, seek to maintain cropping/horticultural land uses, enhance patterns of tree cover associated with settlement and conserve and enhance patterns of hedgerows. There are also areas of Principal Settled Farmlands in the west of the area of search in these areas pastoral land use rather than cropping/ horticulture would be appropriate.

b) Flood alleviation

Policy criteria

In Alternative A, policies could consider how mineral site restoration could positively address fluvial, surface water and ground water flood alleviation. This might include consideration of flood storage reservoirs, restoring channels to reinstate more natural fluvial-floodplain processes or providing more sinuous and wider channels and greater flow variability. Any proposals would need to consider impacts on the wider catchment, for example any restoration proposal that provides additional channel conveyance, may increase flows and result in positive outcomes locally but could lead to increased flood risk downstream if the implications are not fully thought through. The potential for flood alleviation to provide multifunctional benefits could also be promoted through policy.

Policy criteria

In Alternative B, policies could consider the policy approach as identified in the River Severn Catchment Flood Management Plan (RSCFMP) and any relevant surface and ground water issues for each area of search and the opportunity area for clay. Details of appropriate action could be outlined, depending on the relevant policy area.

Worked example

This is a Policy 2 area: "Areas of low to moderate flood risk where we (the Environment Agency) can generally reduce existing flood risk management actions." Restoration proposals should identify how the restoration of sustainable natural storage of floodwater on undeveloped floodplains is a **significant component** of the restoration scheme. Proposals should also show how measures to address surface water flooding have been included as **significant components**.

Policy criteria

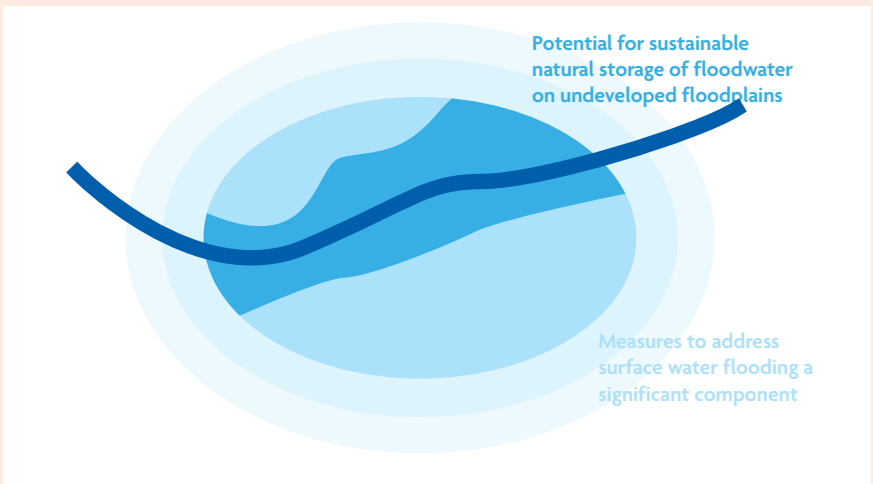
In Alternative C, policies could consider the policy approach as identified in the RSCFMP and any relevant surface and ground water issues for each area of search and the opportunity area for clay. Details of appropriate action could be outlined, depending on the relevant policy area.

Spatial master-plan

The "spatial master-plan" could be developed to identify where there is potential to implement appropriate actions.

Worked example

This is a Policy 2 area: "Areas of low to moderate flood risk where we (the Environment Agency) can generally reduce existing flood risk management actions." Restoration proposals should identify how the restoration of sustainable natural storage of floodwater on undeveloped floodplains is a **significant component** of the restoration scheme, particularly where the spatial master-plan indicates there is potential to implement such measures. All proposals should also show how measures to address surface water flooding have been included as **significant components**, particularly where the spatial master-plan indicates there is potential to implement such measures.



c) Habitat quality and fragmentation

Policy criteria

In Alternative A, policy criteria could be developed to promote restoration proposals that enhance habitat quality and connectivity, such as by creating stepping stones and corridors to enhance existing habitat networks through the integration of appropriate local Biodiversity Action Plan habitats. Proposals would need to refer to tools such as the Worcestershire Habitat Inventory, the Technical Research Paper "Biodiversity and Mineral Sites in Worcestershire" and the Biodiversity Delivery Areas.

Policy criteria

In Alternative B, policy criteria could be developed to promote restoration proposals that enhance habitat quality and connectivity, such as by creating stepping stones and corridors to enhance existing habitat networks. Policies will need to identify the appropriate local Biodiversity Action Plan habitats for each area of search and the opportunity area for clay using tools such as the Worcestershire Habitat Inventory, the Technical Research Paper "Biodiversity and Mineral Sites In Worcestershire" and the Biodiversity Delivery Areas.

Worked example

Habitat quality and fragmentation is a **determining factor** in this area of search and an over-arching priority in this corridor. The proposal should demonstrate how opportunities to enhance networks of xxx habitat have been utilised and how this links to the wider habitat network.

Policy criteria

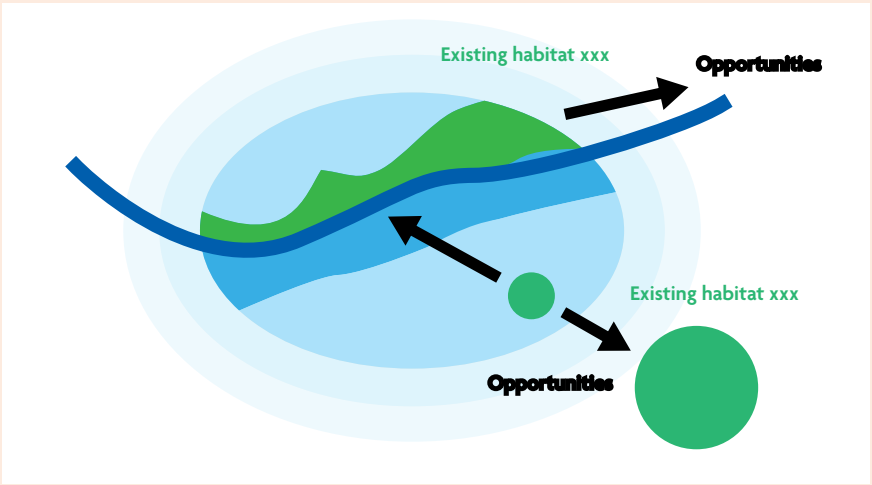
In Alternative C, policy criteria could be developed to promote restoration proposals that enhance habitat quality and connectivity, such as by creating stepping stones and corridors to enhance existing habitat networks. Policies would need to identify the appropriate local Biodiversity Action Plan habitats for each area of search and the opportunity area for clay using tools such as the Worcestershire Habitat Inventory, the Technical Research Paper "Biodiversity and Mineral Sites In Worcestershire" and the Biodiversity Delivery Areas.

Spatial master-plan

The "spatial master-plan" could be developed to identify where there is potential to create appropriate habitats and link existing habitats.

Worked example

To enhance habitat connectivity, corridors and stepping stones of xxx habitat should be created to link with the wider network as indicated by the spatial master-plan. Opportunities identified in the spatial master plan should guide the consideration of habitat quality and fragmentation as a **determining factor.** Links to other areas of search in this corridor should also be a key consideration.



d) Water quality

Policy criteria

In Alternative A, policies could consider how mineral site restoration could positively address the quality of water courses. This would need to include impacts on the quality, quantity and flow of these assets. Policies should take into account the provisions of the Water Framework Directive, promoting opportunities to deliver improvements to ecological or chemical quality of water courses. The potential for water quality improvement measures to provide multifunctional benefits could also be promoted through policy.

Policy criteria

In Alternative B, policy criteria could be developed to promote restoration proposals that address the quality of existing water courses in each area of search and the opportunity area for clay. Policies would need to take into account the quality of any Water Framework Directive watercourses and promote opportunities to deliver improvements to ecological or chemical quality of water courses.

Worked example

Water quality is a **significant component**, as the area of search spans a water course with good ecological quality but failing chemical quality. The proposal should demonstrate how measures to enhance water quality are a **significant component** of the restoration scheme.

Policy criteria

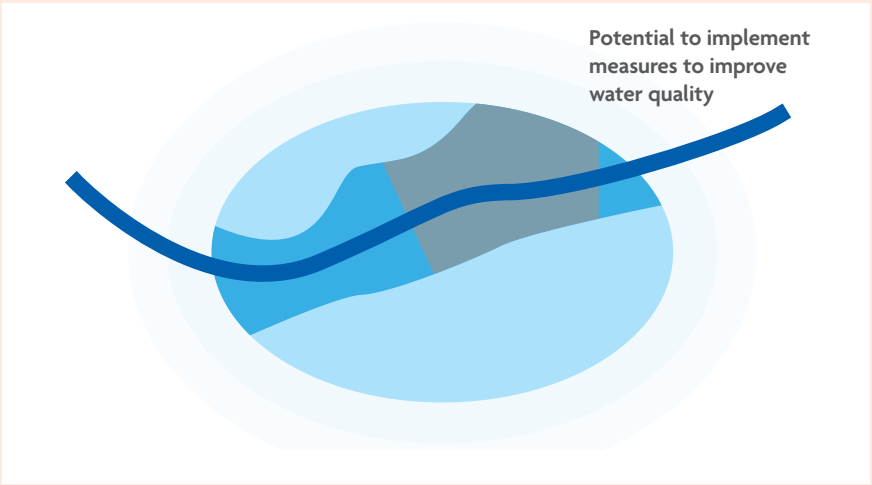
In Alternative C, policy criteria could be developed to promote restoration proposals that address the quality of existing water courses in each area of search and the opportunity area for clay. Policies would need to take into account the quality of any Water Framework Directive watercourses and promote opportunities to deliver improvements to ecological or chemical quality of water courses.

Spatial master-plan

The "spatial master-plan" could be developed to identify where there is potential to implement water quality improvement measures.

Worked example

Water quality is a **significant component,** as the area of search spans a water course with good ecological quality but failing chemical quality. The proposal should demonstrate how measures to enhance water quality are a **significant component** of the restoration scheme, particularly where the spatial master plan indicates there is potential to implement such measures. As River xxx is failing WFD objectives based on chemical quality, measures such as buffer-strips or settlement ponds could be appropriate in the areas identified in the spatial master-plan.



e) Geodiversity

Policy criteria

In Alternative A, policies could consider how mineral site restoration could positively contribute to the coherent understanding of geodiversity. Consideration should be given to the protection of geological Sites of Special Scientific Interest and Local Geological Sites. Policies could promote the potential to protect or record geological features if they are uncovered during extraction, particularly in the Abberley and Malvern Hills Geopark, the Cotswolds AONB or the Malvern Hills AONB.

Policy criteria

In Alternative B, policy criteria could be developed to promote the coherent understanding of geodiversity. Policies would need to take into account any geological Sites of Special Scientific Interest and Local Geological Sites for each area of search and the opportunity area for clay, as well as the Abberley and Malvern Hills Geopark, the Cotswolds AONB or the Malvern Hills AONB.

Worked example

Geodiversity should be **integrated wherever possible** into restoration schemes, adding to the coherent understanding of geodiversity and referring to the nearby geological SSSI and Local Geological Site.

Policy criteria

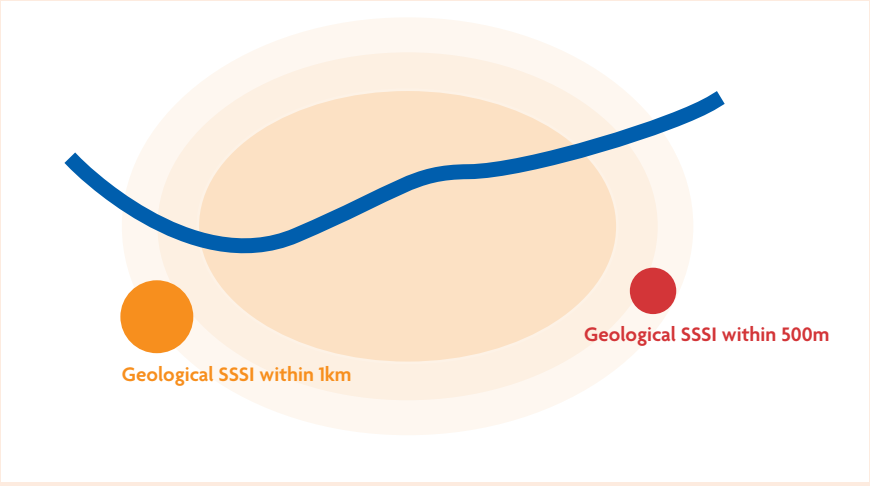
In Alternative C, policy criteria could be developed to promote the coherent understanding of geodiversity. Policies would need to take into account any geological Sites of Special Scientific Interest and Local Geological Sites for each area of search and the opportunity area for clay, as well as the Abberley and Malvern Hills Geopark, the Cotswolds AONB or the Malvern Hills AONB.

Spatial master-plan

The "spatial master-plan" could be developed to identify where there are opportunities to add to the coherent understanding of geodiversity.

Worked example

Geodiversity should be **integrated wherever possible** into restoration schemes, adding to the coherent understanding of geodiversity and referring to the nearby geological SSSI and Local Geological Site which are highlighted on the spatial master-plan.



f) Horticulture and food production

Policy criteria

In Alternative A, policies could consider how mineral site restoration could positively contribute to safeguarding the long term potential of best and most versatile agricultural land and conserving soil resources by handling and reinstating soils with the aim of maintaining their quality. This would be particularly important where the proposal is in an area of high quality agricultural land. Consideration could be given to reinstating the original soil asset where possible, or concentrating high quality soil resources in restoring some parts of the site to high grade agricultural land and delivering low intensity grazing or wetland habitats in parts of the site with lower soil quality or where the lowered land level following mineral extraction does not allow for restoration of the entire area to high quality agricultural land. The potential for horticulture and food production to be integrated with other multifunctional benefits could also be promoted through policy.

Policy criteria

In Alternative B, policy criteria could be developed to promote restoration proposals that safeguard the long term potential of best and most versatile agricultural land and conserving soil resources. Policies will need to identify the agricultural land quality and opportunities to restore high quality land in each area of search and the opportunity area for clay.

Worked example

Horticulture and food production is a **determining factor**. Restoration proposals should demonstrate how original soil assets will be utilised across all or part of the site to restore high grade agricultural land. Reinstatement to agriculture should reflect the landscape character with the appropriate mix of pasture in the west and cropping/horticulture across the rest of the area.

Policy criteria

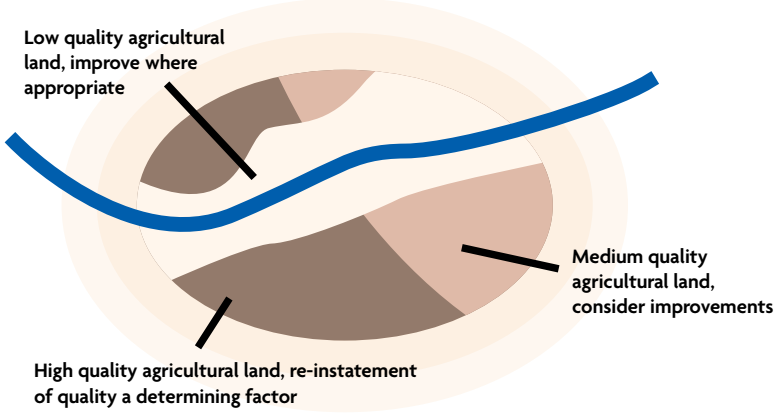
In Alternative C, policy criteria could be developed to promote restoration proposals that safeguard the long term potential of best and most versatile agricultural land and conserving soil resources.

Spatial master-plan

The "spatial master-plan" could be developed to identify the agricultural land quality and opportunities to restore high quality land in each area of search and the opportunity area for clay.

Worked example

Horticulture and food production is a **determining factor**. Restoration proposals should demonstrate how original soil assets will be utilised, particularly in the areas of high grade agricultural land highlighted on the spatial master-plan. Reinstatement to agriculture should reflect the landscape character with the appropriate mix of pasture in the west and cropping/horticulture across the rest of the area.



g) Historic environment

Policy criteria

In Alternative A, policies could consider how mineral site restoration could positively contribute to enhancing or better revealing the significance of heritage assets. Consideration could be given to conserving designated and undesignated historic assets and their setting, taking into account and improving the understanding of the archaeological potential of an area, promoting any opportunities for the sustainable management of heritage assets and their setting, encouraging the engagement with and understanding of heritage assets through improved access and promotion to the public. The potential for the historic environment to be integrated with other multifunctional benefits could also be promoted through policy. Proposals would need to refer to tools such as the Historic Environment Record, Historic Environment Assessment, and the Historic Landscape Characterisation.

Policy criteria

In Alternative B, policy criteria could be developed to promote restoration proposals that contribute to enhancing or better revealing the significance of heritage assets. Policies would need to identify heritage assets and their settings for each area of search and the opportunity area for clay, including any World Heritage Sites, Registered Battlefields, Registered Historic Parks and Gardens, Scheduled Ancient Monuments, Listed Buildings, Conservation Areas, Historic farmsteads and vernacular or locally important features, and could use tools such as the Historic Environment Record, Historic Environment Assessment, and the Historic Landscape Characterisation.

Worked example

The historic environment is a **significant component**. The proposal should demonstrate how measures to enhance or better reveal the significance of heritage assets and their settings are a **significant component** of the restoration scheme. This should focus on the listed buildings xxx and xxx and assets xxx, xxx and xxx identified on the Historic Environment Record.

Policy criteria

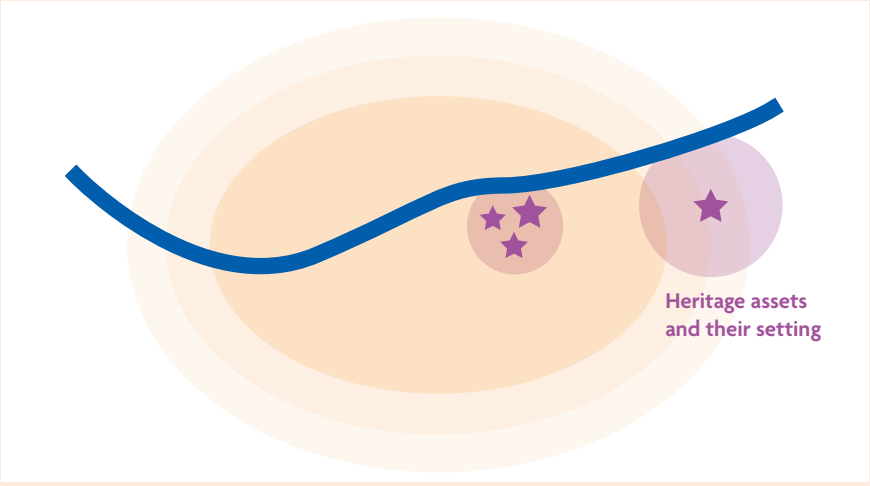
In Alternative C, policy criteria could be developed to promote restoration proposals that contribute to enhancing or better revealing the significance of heritage assets.

Spatial master-plan

The "spatial master-plan" could be developed to identify heritage assets and their settings and the features for which they are noted for each area of search and the opportunity area for clay.

Worked example

The historic environment is a **significant component**. The proposal should demonstrate how measures to enhance or better reveal the significance of the heritage assets and their settings are a **significant component** of the restoration scheme. This should focus on the listed buildings and assets identified on the Historic Environment Record, as indicated on the spatial master-plan.



h) Access and recreation

Policy criteria

In Alternative A, policies could consider how mineral site restoration could positively contribute to enhancing access and recreation opportunities. Consideration could be given to recreation provision on a wider range of scales, including "areas of search" identified for informal recreation sites identified in GI Framework Document 3 and emerging Local Plans, or neighbourhood scale sites where proposals are in close proximity to communities, the creation or enhancement of public rights of way and long-distance routes. Consideration of other leisure facilities or commercial enterprises may be appropriate. The potential for access and recreation to be integrated with other multifunctional benefits could also be promoted through policy.

Policy criteria

In Alternative B, policies could be developed to promote mineral site restoration which positively contributes to enhancing access and recreation opportunities. Policies would need to identify "areas of search" for informal recreation sites identified in GI Framework Document 3 and emerging Local Plans, public rights of way and long-distance routes for each area of search and the opportunity area for clay.

Worked example

Access and recreation is a **determining factor** and opportunities to provide substantial recreation facilities in the "area of search" for informal recreation should be utilised, in line with other polices in the development plan. Elsewhere in the area of search for aggregates the proposal should demonstrate how opportunities to enhance access and recreation have been utilised and seek to make links with the wider public rights of way network.

Policy criteria

In Alternative C, policies could be developed to promote restoration proposals that positively contribute to enhancing access and recreation opportunities.

Spatial master-plan

The "spatial master-plan" could be developed to identify "areas of search" for informal recreation sites identified in GI Framework Document 3 and emerging Local Plans, public rights of way and long-distance routes for each area of search and the opportunity area for clay.

Worked example

Access and recreation is a **determining factor** and opportunities to provide substantial recreation facilities in the "area of search" for informal recreation should be utilised, in line with other polices in the development plan. Elsewhere in the area of search for aggregates the proposal should demonstrate how opportunities to enhance access and recreation have been utilised and seek to make links with the wider public rights of way network indicated on the spatial master-plan.

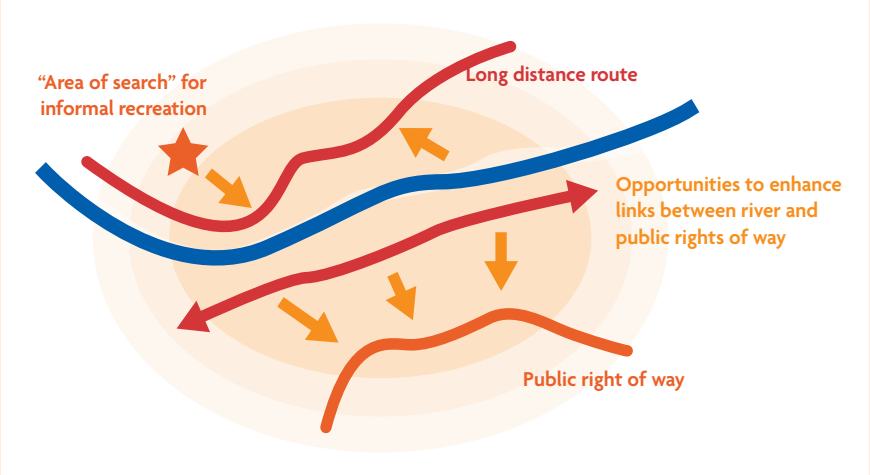
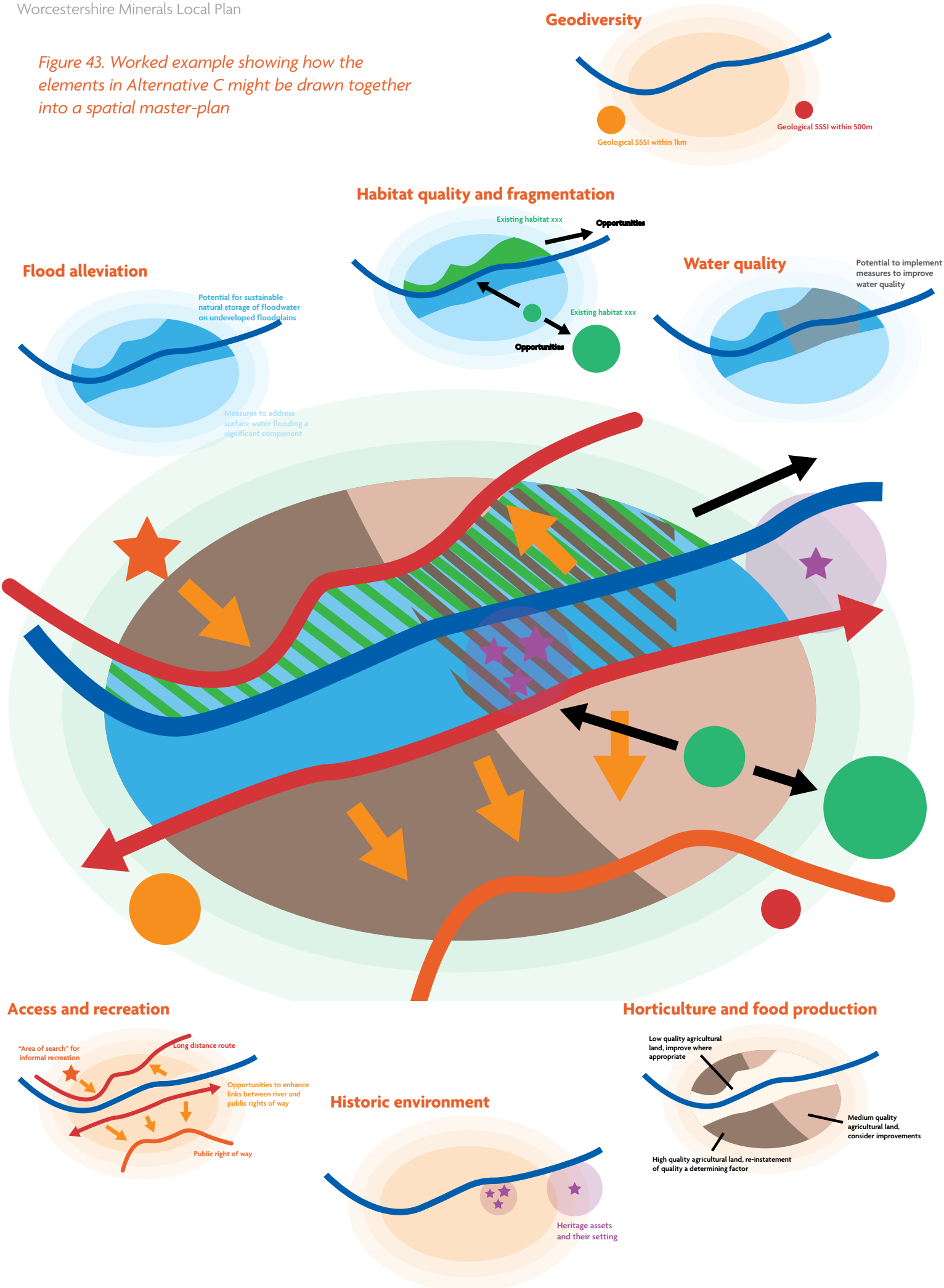


Figure 43. Worked example showing how the elements in Alternative C might be drawn together into a spatial master-plan



12.126 Each of these alternatives has advantages and disadvantages which we need to take into account when deciding which to pursue:

Alternative A: Policies to ensure all proposals give proportionate weight to restoration priorities

This approach could be developed to build on the policy concepts set out in this consultation document and the responses you make. Consultation would continue to take place throughout the development of the Minerals Local Plan, enabling engagement with the development of the policies.

Individual proposals would then be developed as part of applications for planning permission on a site-by-site basis by the minerals industry to meet the requirements of the policy framework.

The advantages of the approach proposed in Alternative A could include:

- Developing one set of policies which could be applied to all types of mineral development on a case-by-case basis.
- Providing some certainty for both developers and local communities at application stage.
- Enabling quicker production than Alternative B or C, meaning that the Minerals Local Plan could be adopted more quickly.

The disadvantages of the approach proposed in Alternative A might include:

- Less certainty than provided by Alternative B or C. The approach for any particular area of search would not have been endorsed by partners or have community buy-in in detail in advance of pre-application stage.
- A lack of guidance about how to address factors which vary in importance within the area of search or opportunity area.
- Does not include scope for guidance about how to integrate complimentary priorities or reconcile competing objectives in each area of search.
- Lack of direction as to where links should be made with existing features, networks or adjoining areas of search or how all the factors should be coordinated and integrated with existing features and corridors across multiple sites over the timescale of the plan.
- Allowing significant discretion for individual developers to adapt proposals might risk deviation from the spatial strategy. Different approaches on individual sites may not result in coherence across the area, particularly where proposals are brought forward at different times by different developers.

Alternative B: Policies for each area of search and opportunity area for clay

This approach could be developed to build on the policy concepts set out in this consultation document and the responses you make. This would require some time or resource input from partners such as the Environment Agency, Natural England, Forestry Commission, English Heritage and Worcestershire Wildlife Trust to make sure that we have all the relevant information and interpret it correctly. Consultation would continue to take place throughout the development of the Minerals Local Plan, enabling engagement with the development of the policies and the opportunity to influence the detailed issues which are set out for each area of search or opportunity area.

Individual proposals would then be developed on a site-by-site basis by the minerals industry to meet the requirements of the policy framework for the area of search or opportunity area.

The advantages of the approach proposed in Alternative B could include:

- Enabling the over-arching priorities and strategic restoration priorities to be promoted, but leaving some discretion for individual developers to adapt proposals.
- Providing some direction as to how all the factors should be coordinated and integrated with existing features and corridors across multiple sites over the timescale of the plan and giving some guidance about how to integrate complementary priorities or reconcile competing objectives.
- Providing a good level of certainty for both developers and local communities at application stage.

The disadvantages of the approach proposed in Alternative B might include:

- Separate policies may also need to be developed for the next stage of consultation for other types of energy or industrial minerals for which no areas of search or opportunity area are identified.
- A lack of guidance about how to address factors which vary in importance within the area of search or opportunity area.

- Allowing some discretion for individual developers to adapt proposals might risk deviation from the spatial strategy. Different approaches on individual sites may not result in coherence across the area.
- Difficulty in highlighting where links should be made with existing features, networks or adjoining areas of search.
- There is less scope than Alternative C for guidance about how to integrate complimentary priorities or reconcile competing objectives in each area of search.
- Developing policies for each area of search and opportunity area for clay could help to streamline processes when proposals are submitted. However front-loading this process may increase timescales during plan preparation.

Alternative C: Policies and spatial master-plans for each area of search and opportunity area for clay

For this approach to work it would need to be driven by a partnership approach and would require the support and agreement of a range of interests. A partnership already exists in Worcestershire, the "Worcestershire Green Infrastructure (GI) Partnership" which includes bodies such as the Environment Agency, Natural England, Forestry Commission, English Heritage and Worcestershire Wildlife Trust, and this partnership is developing a sub-regional green infrastructure framework and strategy. The Worcestershire Green Infrastructure Partnership would provide a logical starting point to enable the master-planning process to proceed quickly, but additional support may be needed from other bodies to ensure each of the high-level restoration priorities is represented. This would require a resource and time commitment from all those involved, and this commitment would need to be secured before Alternative C could be developed in detail.

If an approach to master-planning is agreed by a "Minerals and GI Partnership", the master-plans themselves could then be developed for each "corridor" of areas of search or opportunity area with engagement from relevant parish councils and community or interest groups. Consultation would continue to take place throughout the development of the Minerals Local Plan, enabling meaningful community engagement and a transparent process throughout. This could include focused consultation with the communities most affected.

Individual proposals would then be developed on a site-by-site basis by the minerals industry, to fit within the framework of the master-plan for the area of search or opportunity area.

The advantages of the approach proposed in Alternative C could include:

- Providing direction and a visual interpretation of the spatial strategy and restoration priorities at an area of search level. This would give greater clarity about how to integrate complementary priorities or reconcile competing objectives, particularly where there are factors which are important across areas of search as a whole but may vary in importance within the area. Master-plans would provide a basis for varying approaches on individual sites whilst retaining coherence across the area.
- Presenting a cohesive Green Infrastructure approach to integrating each aspect so that the whole is greater than the sum of its parts, rather than concentrating on one issue at a time.
- Master-planning areas of search would allow the consideration of "corridors" and could highlight where links could be made with existing features, networks or adjoining areas of search, as well as between sites within an area of search. It could also highlight links to key features beyond the county boundary.
- Providing greater certainty for both developers and local communities at application stage, as the approach would have been endorsed by partners in advance. This could also help to streamline processes for applicants, stakeholders and the planning authority at the pre-application and application stage and could result in cost and time savings when proposals are submitted. However front-loading this process may increase timescales during plan preparation.
- A co-ordinated master-plan approach would help to facilitate the delivery of the vision and the spatial strategy.

The disadvantages of the approach proposed in Alternative C might include:

- Separate policies may also need to be developed for the next stage of consultation to be applied as applications for other types of energy or industrial minerals for which no areas of search or opportunity area are identified.
- The benefits of this approach rely on partnership support at an early stage being continued throughout the process.

- There may be less flexibility in the long-term, making it difficult to accommodate changing priorities during the plan period. However taking a high-level approach to master-planning for the area of search or spatial strategy corridor rather than master-planning specific sites should limit this disadvantage.
- It will take longer to develop the Plan; this will give less certainty to the industry in the short term.

12.127 Although the direction of government advice is to minimise and simplify the number of planning policy documents produced so that the requirements are as clear as possible for local people and businesses, a further possibility would be to develop a policy framework as proposed in Alternative A as part of the Minerals Local Plan, followed by the development of individual Supplementary Planning Documents (SPDs) for each area of search and opportunity area for clay. SPDs could either set out the considerations for each area as proposed in Alternative B, or could be developed into master-plans as proposed in Alternative C.

12.128 Supplementary Planning Documents are intended to provide additional information to assist with the interpretation and implementation of policies set out within the Development Plan. If SPDs are developed in consultation with the public, revised and then approved for development control purposes by the Council, significant weight could be given to them as a material consideration when the Council makes its decision on planning applications.

Consultation Question

Q28. Which of these alternatives do you prefer and why?
- **Alternative A**
- **Alternative B**
- **Alternative C**
- **Alternative A with Alternative B as an SPD**
- **Alternative A with Alternative C as an SPD**

Q29. If you think that there are other alternatives that we should consider for driving the delivery of restoration priorities, please provide details.

Cross-cutting site-specific restoration policies to be applied to all mineral developments

12.129 We would expect all proposals to include a restoration plan setting out how strategic restoration priorities would be addressed. Restoration plans would also need to address cross-cutting site-specific issues. We have identified the crosscutting issues that we think restoration plans should address in Table 24. Some issues are addressed by other parts of the Development Plan (such as the local City, Borough or District Council Local Plan). Restoration plans would also need to refer to these. We will also need to take these policies into account when developing restoration policies in the Minerals Local Plan to avoid duplication and ensure a consistent approach.

12.130 Table 24 sets out broad restoration concepts. Once the concepts have been finalised they will be worked into draft policies and supporting text. We will consult on these at the next stage. Addressing these issues through the policy framework will be an essential part of our approach to enabling sustainable development.

12.131 We propose to enable new mineral development where it is demonstrated that all of the following issues relating to the restoration of sites have also been adequately addressed[72].

Consultation Question

Q30. We would like to know if you support the policy issues identified. Please also give details of any additional considerations which should inform each topic.

72 At the next stage, it may be possible to address many of these issues for both the working and restoration phases of any development together. The issues are outlined here to ensure that all relevant matters are addressed and to invite comment on them.

Table 24. Issues to be addressed through policy criteria: How will mineral workings be restored?

Impacts on health, amenity and Worcestershire's key economic sectors:	
a.	Noise and vibration – impacts could be managed through controlling restoration practices, phasing and site management to aid noise attenuation, controlling when some activities will be permitted, limiting the number of days or hours of working or imposing noise and vibration limits. Policies will also need to consider potential noise and vibration resulting from any intended after-use of the site.
b.	Air quality and dust – impacts from restoration activities could be managed through practices such as the use of sprinkler systems to damp down haul roads and stockpiles, sheeting of vehicles or wheel washing facilities and imposing dust limits. Policies will also need to consider potential air quality or dust implications of the intended after-use of the site. Consideration may also need to be given to any Air Quality Management Areas in or around the county.
c.	Visual intrusion – policies could be developed to encourage reclamation of land at the earliest opportunity and ensure consideration is given to potential visual impacts from the final restoration scheme and after-use of the site.
d.	Light pollution – impacts could be managed through controlling lighting levels, directional lighting or controlling working hours during restoration. Policies will also need to consider the potential for light pollution from the intended after-use of the site.
e.	Odour – policies will need to consider appropriate management of storage and drainage systems during restoration and after-use of the site, as well as any other odour implications from the intended after-use of the site.
f.	Public rights of way – policies will need to consider protecting or reinstating existing public rights of way, long distance paths, and cycling routes, and exploring opportunities to add to or enhance the existing network. This might include consideration of creating stopping points or points of interest along new or existing routes.
g.	Amenity along transport routes – site restoration can involve importing and exporting materials, and can therefore result in impacts along transport routes as well as in proximity to the mineral working. Impacts should therefore be considered where they result from transport to, from and around the site. Policies will also need to consider the potential for impacts on amenity along transport routes from the intended afteruse of the site.
Climate change:	
h.	Flood risk – all proposals would need to consider impacts both on and off site, and ensure site safety during flooding events, when considering the appropriateness of the restoration proposal. Phasing of site restoration may be a consideration in minimising the risk of the workforce being cut off by rising water.
i.	Soil resources – policies could be developed to consider handling and reinstating soils with the aim of maintaining their quality. This would be particularly important where the site is in an area of high quality agricultural land. It may be appropriate to require part or all of the site to be restored to the original quality or to require an equivalent area of land to be upgraded to high quality agricultural land elsewhere.
j.	Land stability and subsidence – this might address slope stability, settlement, quarry backfill, mining subsidence and seismic vibration. Policies will also need to consider the potential risks of subsidence for the intended after-use of the site.
k.	Maximising use of recycled materials and minimising waste – policies could be developed to consider how on-site waste materials such as overburden and sub-soils can be re-used as part of restoration proposals and to minimise the importation of waste or inert fill in line with the Waste Core Strategy.

Sustainable transport:

l. Sustainable transportation – site restoration can involve importing and exporting materials, and the merits of road, rail, water or other alternative modes of transport will be a consideration. The issues will be very site specific. Policies will also need to consider the potential for sustainable transport for the intended after-use of the site.

m. Safety of or congestion on transport routes – it is important to consider vehicular and pedestrian safety and access to, from and around the site, and impacts on surrounding transport networks, from both site restoration activities and the intended after-use of the site. Travel plans and routing agreements may be methods for managing this.

Natural and historic environment:

n. Protection and enhancement of internationally, nationally and locally designated sites, habitats and species – policies will need to address:

- European sites of nature conservation importance[73] in line with legal requirements.
- Internationally identified habitats and species in line with legal requirements.
- Nationally identified habitats, species and nature conservation sites – these include Sites of Special Scientific Interest, National Nature Reserves and Ancient Semi-Natural Woodland. National policy encourages a high level of protection to be given to these features.
- Locally identified habitats, species and nature conservation sites – these include local wildlife sites, local nature reserves and priority habitats identified in the local Biodiversity Action Plans and networks of and links between these. National policy encourages the protection of these features. The potential impacts on any Nature Improvement Areas could also be considered.

The impact mineral site restoration could have on these sites needs to be considered, both on its own and in combination with other activities. Policies could consider how mineral site restoration could positively address the conservation aims and objectives, seek to expand existing habitats and enhance linkages to wider habitat networks. The potential for minerals site restoration to provide multifunctional benefits could also be promoted through policy.

o. Ground and surface water resources - protection needs to be given to these resources. Considerations would relate to the continuation or change of abstraction or dewatering activities, impacts on the water table, settlement and discharge, pollution and contamination. This could include consideration of source protection zones and potential impacts on the quality and quantity of water resources.

p. Green belt – policies could be developed to ensure that restoration proposals would not conflict with national policy on green belt.

q. Geodiversity – policies could be developed to ensure that any geological or geomorphological features exposed during working are protected and incorporated as part of the restoration proposal or are recorded before restoration takes place. Consideration should be given to the protection of geological Sites of Special Scientific Interest and Local Geological Sites, and consideration could also be given to the long term maintenance of and access to geological features.

r. Heritage assets and their settings – policies will need to consider harm to World Heritage Sites, Scheduled and unscheduled Ancient Monuments, Listed Buildings, Conservation Areas, and assets recorded on the Historic Environment Record. Consideration could also be given to the potential to conserve or improve the understanding of the significance of heritage assets and their settings, promote the sustainable management of heritage assets and their settings which are identified as being at risk, and explore opportunities to re-use, integrate, improve the management or improve public access to heritage assets as part of the restoration proposal. Policies could also promote consideration of vernacular or locally important features.

73 The National Planning Policy Framework, paragraph 119, states that "The presumption in favour of sustainable development (paragraph 14) does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined". A Habitats Regulations Assessment is being developed alongside the emerging Minerals Local Plan and this will be taken into account as policies are developed.

s. Archaeology – due to their scale and nature, mineral workings can have a unique impact on archaeological features. Policies would address the potential to protect or record archaeological features, including opportunities to improve the understanding of the archaeological potential of an area as part of restoration proposals.

t. Landscape – policies will need to ensure the consideration of landscape character is an important factor in restoration proposals. Designations such as Areas of Outstanding Natural Beauty will also have an influence on the design of restoration proposals.

Open and effective engagement:

u. Pre-application discussion – this will be encouraged at an early stage to give communities and other stakeholders the opportunity to raise relevant issues and influence the development of the restoration proposal.

v. Community liaison groups – these will be encouraged throughout the site's development, restoration and aftercare to facilitate effective two-way communication.

Other issues:

w. Built development - built development may be an appropriate part of restoration proposals in some situations. Policies could be developed to set out the scale of any built development which could be considered an ancillary part of a minerals restoration scheme, or when separate planning permission might be required from the relevant district, city or borough council. This might refer to proposals for built development such as buildings, renewable energy schemes, environmental technologies, tourist attractions and educational facilities.

x. Aviation safety – policies will need to address the risk to aviation safety from bird-strike. Consideration could be given to designing restoration schemes to avoid increasing the risk of bird strike. This is likely to refer to 'bird strike zones'.

y. Phasing – policies could be developed to consider sequential working and restoration of different phases of a site. This might indicate steps which will need to be undertaken before a phase could be considered to be complete to allow progression to the next phase.

z. Aftercare – following the implementation of a restoration plan, an aftercare period is required to ensure the restoration scheme is established successfully. This is usually at least five years following the completion of the restoration scheme, but may be longer. Policies could require an aftercare scheme with an outline strategy of commitments for the whole period and a detailed programme for the forthcoming year. In some cases, longer aftercare schemes could be secured by bonds or other financial guarantees, policies could be developed to outline where these may be appropriate.

Consultation Question

Q31. If you think that there are other issues that we should consider relating to the restoration of mineral workings, please provide details.

Fish Hill Quarry

13. How will we safeguard minerals for future use?

In the previous consultation...

13.1 In the previous consultation we did not ask you any questions about safeguarding minerals. This is your first chance to comment on mineral safeguarding.

Our approach now...

13.2 Minerals can only be worked where they are found. If built development, such as roads, housing estates or business parks, takes place on top of mineral resources this can effectively "sterilise" them by inhibiting future extraction.

13.3 It is national policy[74] that Mineral Local Plans should identify specific mineral resources of local and national importance and set out policies to ensure that they are not needlessly sterilised by non-mineral development. This is usually referred to as a "safeguarding" policy. Safeguarding a resource does not mean that it would necessarily be appropriate to work minerals in these areas, or that they would ever be worked but it allows them to be assessed and protected if this is appropriate.

13.4 The draft vision says:

"To enable sustainable supply in the long-term, reserves of aggregates will meet minimum landbank targets by halfway through the plan-period; nationally and locally important mineral resources will be safeguarded for future use; and the use of secondary and recycled materials will be encouraged"

13.5 Draft objective 2 is: Ensure the long term sustainability of supply of mineral resources.

13.6 In the policy framework we intend to:

- identify mineral resources of local and national importance and use these to define Mineral Safeguarding Areas;
- develop policies to protect Mineral Safeguarding Areas from needless sterilisation;
- set out the circumstances when non-mineral development in Mineral Safeguarding Areas might be appropriate; and
- identify other appropriate mineral infrastructure that should be safeguarded, setting out how this should be done.

74 National Planning Policy Framework Paragraph 143.

The detail...

13.7 The National Planning Policy Framework sets out that[75]:

"In preparing Local Plans, local planning authorities should:

- Define Mineral Safeguarding Areas and adopt appropriate policies in order that known locations of specific minerals resources of local and national importance are not needlessly sterilised by non-mineral development, whilst not creating a presumption that resources defined will be worked; and define Minerals Consultation Areas based on these Minerals Safeguarding Areas;
- safeguard:
  - existing, planned and potential rail heads, rail links to quarries, wharfage and associated storage, handling and processing facilities for the bulk transport by rail, sea or inland waterways of minerals, including recycled, secondary and marine-dredged materials; and
  - existing, planned and potential sites for concrete batching, the manufacturing of coated materials, other concrete products and the handling, processing and distribution of substitute, recycled and secondary aggregate material.
- set out policies to encourage the prior extraction of minerals, where practicable and environmentally feasible, if it is necessary for non-mineral development to take place..."

Defining Mineral Safeguarding Areas

13.8 There are several alternatives which could be used to identify Mineral Safeguarding Areas for minerals of national or local importance. It may be appropriate to use a different approach for different mineral resources. At this stage we consider that the following approaches are appropriate for each of the kinds of minerals listed, however we would like to know what you think:

Building stone:

13.9 We think that some sources of building stone are of local importance. In order to "maintain and foster local distinctiveness" in the county we propose to identify the quarries identified in the English Heritage Strategic Stone Study as assets to be safeguarded[76]. In preparation for the next consultation we will need to collate this information into a format which could be used to identify safeguarded assets in the Minerals Local Plan.

Industrial Minerals:

Clay

13.10 Clay is identified in the National Planning Policy Framework as an industrial mineral which the Minerals Local Plan should make provision for. On this basis we considered it to be of national importance.

13.11 Mercia Mudstone (a type of clay) is worked in Worcestershire to make bricks and supplies a national market however we do not have the information to identify whether any particular sub-groups of Mercia Mudstone are more important than others.

13.12 We think that there are two alternative approaches for safeguarding clay in Worcestershire:

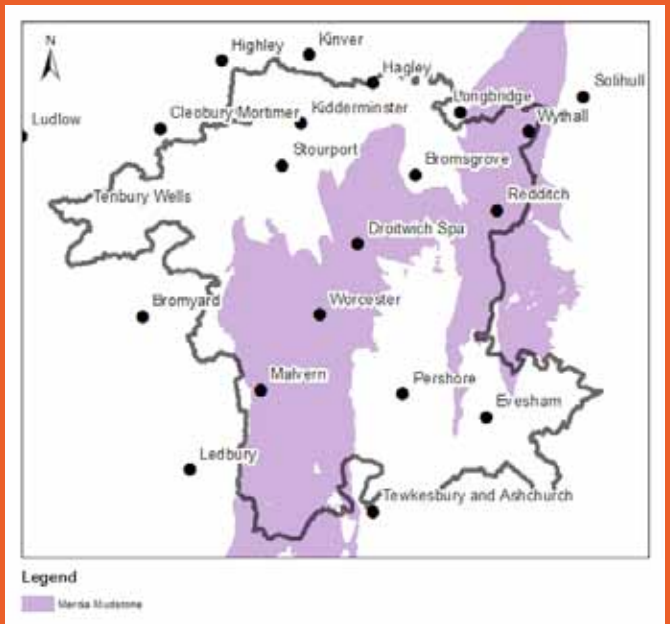
a) to identify all Mercia Mudstone in the county as a resource to be safeguarded. Mercia Mudstone covers a large area of the county as shown in Figure 44.

b) not to identify any clay resources in the county for safeguarding, because we don't know which particular sub-groups of Mercia Mudstone are more important than others.

75 Paragraph 143.

76 http://mapapps.bgs.ac.uk/buildingStone/BuildingStone.html

Figure 44.Potential Mineral Safeguard Areas: Clay (Mercia Mudstone)



13.13 We think that option a) is the most appropriate alternative as it would enable the council to require further information and thereby ensure that the importance of the resource is adequately assessed. Although this has benefits for ensuring the long-term supply of mineral resources it might place additional burdens on developers.

Salt and brine:

13.14 Salt and Brine resources in Worcestershire are not considered to be of national or local importance. In addition it is not considered likely that they will be workable or commercially attractive in Worcestershire in the future due to issues relating to ground stability and subsidence. Therefore we don't propose to identify safeguarding areas for the extraction of salt and brine will be identified in Worcestershire.

Silica sand:

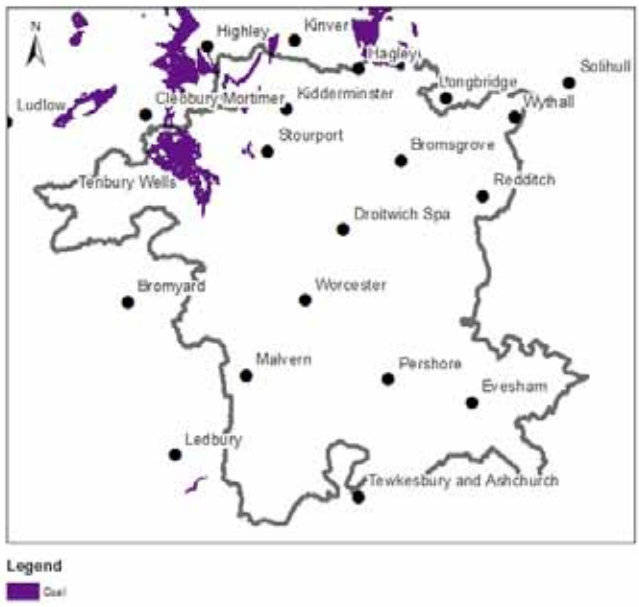
13.15 Silica sand is identified in the National Planning Policy Framework as an industrial mineral which the Minerals Local Plan should make provision for. On this basis it is considered to be of national importance. Silica Sand deposits form part of the solid sand deposits (Wildmoor Formation) which are considered in Figure 46 below. We therefore do not propose to define separate safeguarding areas for Silica Sand, but to include it as part of the provision for safeguarding solid sand deposits (see Alternatives for aggregate minerals below).

13.16 Silica Sand in the Wildmoor formation is a source of naturally-bonded foundry sand, which was important in the early development of the foundry castings industry[77]. It could therefore be argued that this silica sand should be safeguarded from working for use as an aggregate. However, the properties of naturally-bonded sand cannot be controlled as easily as synthetic foundry sand and this, together with the wider use of chemical binders, has contributed to the decline in their use[78]. Given this information we do not intend to safeguard silica sand for such purposes.

Energy Minerals:

Coal

Figure 45. Potential Mineral Safeguard Areas: Coal



77 BGS, DETR (1999) Mineral Resource Information for Development Plans, Herefordshire and Worcestershire: Resource Constraints (pg 16). http://www.bgs.ac.uk/mineralsuk/planning/resource.html

78 BGS, DETR (1999) Mineral Resource Information for Development Plans, Herefordshire and Worcestershire: Resource Constraints (pg 16). http://www.bgs.ac.uk/mineralsuk/planning/resource.html

Sorted stockpiles of sand and gravel

13.17 Coal resources have the potential to be of national importance. Safeguarding areas for coal are defined by the Coal Authority (Figure 45). We propose to safeguard these areas through the policies in the Minerals Local Plan.

Hydrocarbons: Conventional (Oil) and unconventional (Shale Gas) hydrocarbons

13.18 These resources have the potential to be of national importance; however they are not thought to be found in the county. We therefore do not think that we can identify Mineral Safeguarding Areas for hydrocarbons in Worcestershire.

Aggregates:

Crushed rock

13.19 Crushed rock reserves can contribute to an identified national and local need and should therefore be safeguarded. Alternative approaches for identifying safeguarding areas for aggregates are outlined in Figure 46 below.

Sand and gravel:

13.20 Sand and gravel reserves can contribute to an identified national and local need and should therefore be safeguarded. Alternative approaches for identifying safeguarding areas for aggregates are outlined in Figure 46 below.

Alternatives for aggregate minerals:

13.21 As indicated above we think that there are several alternative approaches that could be applied to identifying aggregate resources that are of national or local importance. The alternatives are set out in Figure 46.

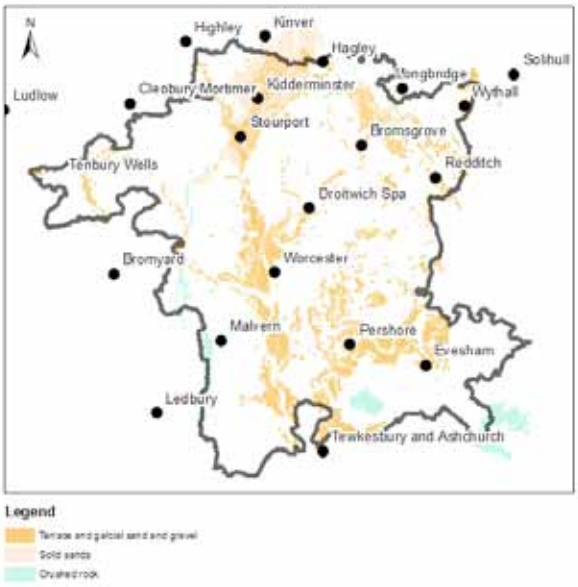
Figure 46. Alternative approaches to safeguarding aggregates

Lower risk of sterilisation
Higher burden on developers

A: Identify all aggregate resources shown on BGS mapping as safeguard areas

This would cover large areas of the county and could be onerous on developers, but would remove the risk of assumptions about the viability of resources, which may change in the future.

This approach would safeguard all known resources, rather than specifically focusing on those which are nationally or locally important.

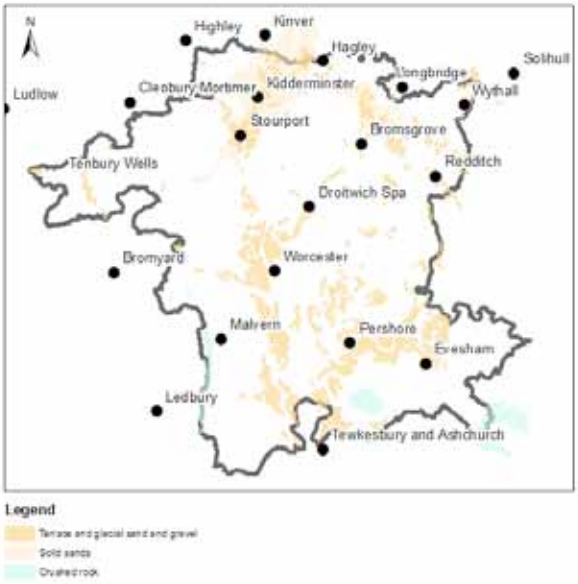


B: Identify all aggregate resources above 10 ha in size and 200 m in width as safeguard areas

This takes the same 'screening' approach as the "Analysis of Mineral Resources in Worcestershire"[79] to identify the resource areas that have been assessed for their significance.

Using this method would be more likely to focus on resources of national and local importance as it screens out smaller areas. However it does not incorporate any assessment of the likely importance of resources.

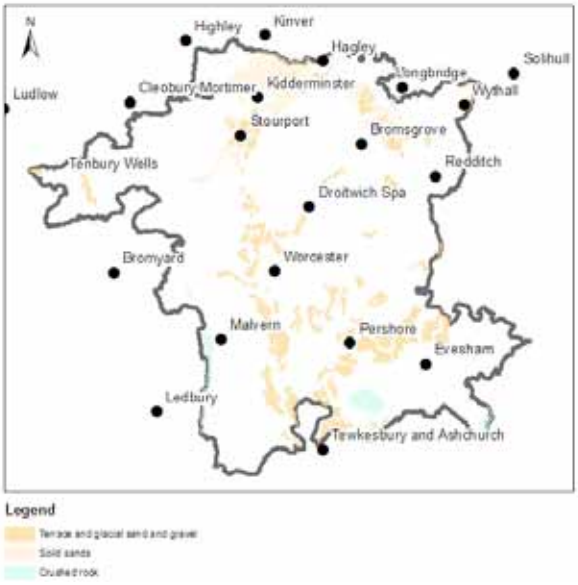
It is acknowledged that information in many of these areas is limited. An advantage of this approach is that it would enable the council to require further information and thereby ensure that the importance of the resource is adequately assessed. Although this has benefits for ensuring the long-term supply of mineral resources it might place additional burdens on developers.



C: Identify those aggregate resource areas assessed to be 'key' or 'significant' in the "Analysis of Mineral Resources in Worcestershire" [80] as safeguarding areas

This approach would result in more focused safeguarding areas and is unlikely to include areas that are not of national and local importance.

This method has the advantage of offering the lowest burden on developers. However a key disadvantage is that some resource areas of national and local importance may not be included in the mineral safeguarding areas due to the limitations of the method used in the analysis of mineral resources; most notably the limited availability of data in some parts of the county. If a resource area is not included in the mineral safeguarding areas identified this would prevent the council from requesting additional information regarding areas where the significance of deposits is unclear. This could compromise long-term supply.



Higher risk of sterilisation
Lower burden on developers

79 Available on www.worcestershire.gov.uk/mineralsbackground

80 Available on www.worcestershire.gov.uk/mineralsbackground

Consultation Question

Q32. Do you support the approaches proposed for each type of mineral resource?

Q33. If you think that there are other approaches which we should consider, please provide details.

Ensuring resources are not needlessly sterilised through the use of Mineral Consultation Areas and the prior extraction of minerals

13.22 Once Mineral Safeguarding Areas have been identified, a policy is needed to set out how non-mineral development in those areas should address minerals issues. This will ensure that the mineral resources are not needlessly sterilised by non-mineral development.

13.23 In line with the guidance in the National Planning Policy Framework we propose to use Mineral Safeguarding Areas to form Minerals Consultation Areas. These will need to be included in the City, Borough and District Plans produced in the county. This means that if development is proposed in a Minerals Consultation Area the relevant City, Borough or District Council will need to consult the County Council and we will respond based on the considerations set out in the policy.

13.24 We need to be careful that this approach does not place undue burden on developers and is practical in its application, so we have set out in Table 25 a range of circumstances where we think that non-mineral development could be appropriate in Minerals Safeguarding Areas (as long as it is in accordance with other aspects of the development plan).

Consultation Question

Q34. We would like to know if you support the circumstances identified where the County Council will not object to development proposals in Mineral Safeguarding Areas. Please tell us why you support or do not support the proposed approaches.

Table 25. Circumstances where we will not object to development proposals in Mineral Safeguarding Areas

Circumstances where the County Council will not object to development proposals in Mineral Safeguard Areas
a) Where the proposed development would not sterilise mineral resources of national or local importance. This could include:
i. requiring applicants to demonstrate that the development itself would not prevent future working, or
ii. requiring applicants to demonstrate that the resource itself is not of national or local importance: the policy would need to include criteria for defining national and local importance, but as current information about the significance of resources is limited this may be a useful approach.
b) Where a) cannot be demonstrated, the mineral is extracted before the non-mineral development takes place: this would need to make allowance for the practicability and environmental feasibility of this as a solution and must consider the current or potential future value of the mineral.

Consultation Question

Q35. If you think that there are other circumstances or additional considerations which we should take into account, please provide details.

13.25 We think that it would be inappropriate to require all non-minerals development in Minerals Consultation Areas to be referred to the County Council as there are some types of development which are very unlikely to prevent future working.

13.26 We think that requiring these types of development to be referred to the County Council would be contrary to the aims of the National Planning Policy Framework, which are to facilitate and enable sustainable development. We therefore think we should develop policies to exclude some types of development from being referred to the County Council when they are proposed in Mineral Safeguarding Areas.

13.27 We think that the exemptions proposed in Table 26 would be appropriate.

Table 26. Circumstances where we would not expect to be consulted on proposals in Mineral Safeguard Areas

Exemptions
a) Proposals for minor development - this would mean that the safeguarding policy would only apply to major development[81] such as: • Mineral development • Waste development • Housing development where more than 10 houses are proposed, or the site is 0.5 hectares or bigger • Buildings that create a floor space of 1,000 square metres or more • Other development where the site is 1 hectare or bigger
b) Proposals for change of use
c) Proposals to replace or alter the design of a building within its existing curtilage
d) Applications for the provision of driveways, garages, car parks, hard standings and non-habitable structures lying within the curtilage of an existing dwelling
e) Minor extensions to existing dwellings and properties where they lie within the immediate curtilage of the existing building
f) Demolition of buildings
g) Proposals for temporary development, including buildings, structures or uses of land
h) Advertisement applications
i) Applications for Conservation Area consent
j) Applications for Listed Building consent
k) Proposals for work to trees or removal of hedgerows

Consultation Question

Q36. We would like to know if you support the exemptions identified where we would not expect the County Council to be consulted. Please tell us why you support or do not support the proposed exemptions.

Q37. If you think that there are other exemptions or additional considerations which we should take into account, please provide details.

Consultation Question

Q38. Do you have any other comments to make on the application of Mineral Consultation Areas and the requirement for prior extraction?

Safeguarding appropriate infrastructure

13.28 The National Planning Policy Framework sets out a range of infrastructure which supports mineral working that should also be safeguarded.

13.29 Our approach to each of these assets is set out in Table 27.

Consultation Question

We would like to know if you support the proposed approach to safeguarding the following types of infrastructure assets:

Q39. Existing, planned and potential rail heads, rail links to quarries, wharfage and associated storage, handling and processing facilities for the bulk transport of minerals?

Q40. Existing, planned and potential sites for concrete batching, the manufacture of coated materials, other concrete products and the handling, processing and distribution of substitute, recycled and secondary aggregate material?

Q41. If you think that there are other potential assets or additional considerations which we should take into account, please provide details.

81 Major development is defined in The Town and Country Planning (Development Management Procedure) (England) Order 2010.

Table 27. Our approach to safeguarding appropriate infrastructure assets

Assets	Approach
Existing, planned and potential rail heads, rail links to quarries, wharfage and associated storage, handling and processing facilities for the bulk transport by rail, sea or inland waterways of minerals, including recycled, secondary and marinedredged materials.	Worcestershire is not a coastal county and there are currently no rail links to quarries in Worcestershire. We therefore do not propose to identify any rail or sea links to safeguard.
	Wharfages exist at two mineral sites in the county. We propose to identify such facilities as assets which should be safeguarded. In general we propose to safeguard wharfages at hub/processing sites but not to safeguard wharfages at "satellite sites" which have been fully worked.
Existing, planned and potential sites for concrete batching, the manufacturing of coated materials, other concrete products and the handling, processing and distribution of substitute, recycled and secondary aggregate material.	Batching plants are not "County Matters", they are permitted and regulated by the District Councils (and the Environment Agency). We therefore do not current hold a database of concrete batching facilities. Further investigation is needed into the location of these assets. Once this information has been collated we propose to identify such facilities as assets which should be safeguarded.
	We are not aware of any facilities in the county for the manufacturing of coated materials, or other concrete products. We therefore do not propose to identify any such facilities to safeguard. However, policies could safeguard any such developments permitted during the life of the plan.
	Facilities for the handling, processing and distribution of recycled aggregate materials are safeguarded by policy WCS 16 in the Waste Core Strategy. We are not aware of any facilities for substitute or secondary aggregate materials. However, policies could safeguard any such developments permitted during the life of the plan.

Proposed policy content

13.30 We propose to develop a policy that addresses safeguarding appropriate infrastructure assets. However, we think that it would be inappropriate to prevent all development, and Table 28 sets out the issues which a policy might address and where development might be considered appropriate. Once the concepts have been finalised they will be worked into draft policies and supporting text. We will consult on these at the next stage.

Consultation Question

Q42. We would like to know if you support the policy issues identified. Please also give details of any additional considerations which should inform each topic.

Table 28. Issues to be addressed through policy criteria: safeguarding appropriate infrastructure assets

Assets to be safeguarded
a) Policies could be developed to safeguard infrastructure assets from development on or adjacent to the asset and could state that the County Council would oppose proposals and will expect District Councils to refuse permission on the grounds that it would compromise the achievement of the Minerals Local Plan. This could specify the kinds of infrastructure assets to be safeguarded.
Circumstances where development might be appropriate
b) Policies could set out circumstances where development on or adjacent to infrastructure assets might be considered appropriate, such as: • where the proposed development would not prevent, hinder or unreasonably restrict the operation of the infrastructure asset • where there is no longer a need for the infrastructure asset • where suitable alternative provision for the infrastructure asset is made.

Consultation Question

Q43. If you think that there are other issues or additional considerations which we should take into account regarding safeguarding infrastructure assets, please provide details.

Beckford Nature Reserve, a former sand and gravel working

14. Next steps

Following this consultation

14.1 Following this consultation we will produce a response document and publish it on our website to tell you how we intend to address the comments you make. We will take the comments into account as we develop the Minerals Local Plan.

14.2 We will continue to co-operate with neighbouring authorities and other bodies to ensure that we take into account developments in other areas or strategies emerging from other organisations, and to ensure that we meet the requirements of the "Duty to Cooperate". Depending on the approach you prefer for driving the delivery of restoration priorities, we will seek commitment from partners to work together to develop policies or spatial master-plans for the areas of search.

14.3 We will continue to monitor changes in national policy and ensure that the Minerals Local Plan meets current requirements. We will continue to develop the Habitats Regulations Assessment and Sustainability Appraisal and take into account their findings and recommendations. We will also develop a Strategic Flood Risk Assessment to inform the development of the Minerals Local Plan.

The next consultation

14.4 The next consultation on the Minerals Local Plan will be a "draft plan", which will be as close as possible to the final document which we intend to submit to the Secretary of State. It will still include consultation questions, but these will be narrower in focus to refine our ideas, as your responses to this consultation will have helped to set the direction we take. The document will include a refined vision, objectives and spatial strategy, as well as precise policy wording and supporting text for you to comment on.

14.5 We also intend to include a commentary on the deliverability of the plan, and set out milestones and a schedule of monitoring indicators which we will use to monitor the achievement of the plan and whether the policies are effective. We will include trigger points for when action might be needed if we are failing to meet targets or if individual policies need reviewing.

Consultation Question

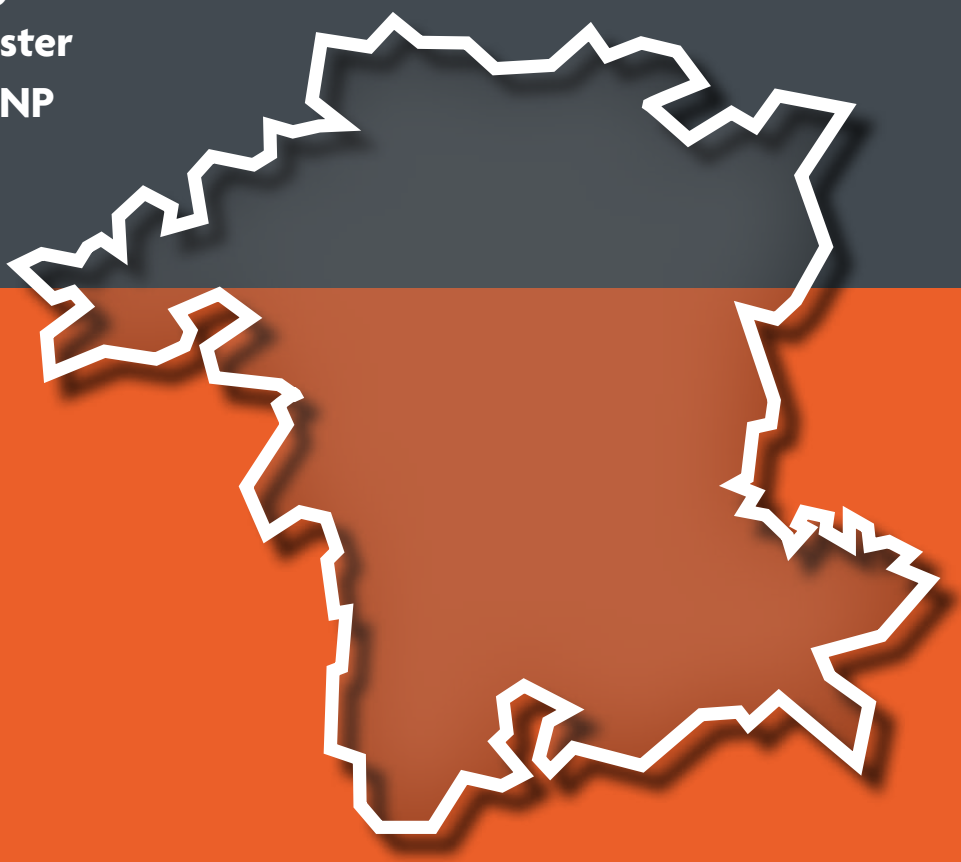
Q44. Are there any other matters you think we need to address in the next consultation?

Please contact us if you need this document in another format, or if you have any questions.

Phone: **01905 766374**

Email: **minerals@worcestershire.gov.uk**

Write to: **FREEPOST SWC-1253**
Minerals and Waste Planning Policy
Worcestershire County Council
County Hall
Worcester
WR5 2NP



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

worcestershire
county council