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Section 1
Introduction

1. It is vitally important that the plans and proposals set out in the Minerals Core Strategy (MCS) are founded on a robust and credible evidence base. Demonstrating how the evidence for the MCS was carefully considered and acted upon will be a key ‘test of soundness’ at the independent examination into the Core Strategy.

2. Consequently this report acts as part of the evidence base for the emerging spatial policy for natural building & roofing stone in Gloucestershire. Its focus is upon the key local issues facing the resource, which include: the ongoing depletion & scarcity of appropriate stone materials, the protection of designated landscapes and local communities, and the opportunity for environmental improvements.

3. The first part of the report sets out the national, regional and local policy context concerning natural building & roofing stone in Gloucestershire. It makes specific reference to the final, published version of Minerals Policy Statement 1 (MPS1) and submission draft of the South West RSS.

4. The second part of this report provides the spatial context for natural building & roofing stone in Gloucestershire and headlines updated resource information for the County up to 31/12/2005.

5. The third part of the report discusses the key local issues facing natural building & roofing stone in the county. The fourth and final part introduces a series of draft options for debate and consideration.

6. The draft options look to progress the development of the MCS by providing clear and deliverable policy options for consideration at the next preparation stage – Preferred Options.

7. These options are based on an assessment of national and regional policies against local circumstances and characteristics. They also seek to embrace the views already provided by stakeholders during the first stage of the MCS – Issues & Options, the initial Sustainability Appraisal and Appropriate Assessment.

8. Your views on the contents of this evidence paper are encouraged, as the information provided within the paper will be central to the future preparation of the MCS.

9. However, there will still be an opportunity to formally comment on your “favoured” options at the Preferred Options stage.

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1 Test vii of the ‘Test of Soundness’ set out in PPS12, states that strategies, policies and allocations must represent the most appropriate in all circumstances, having regard to the relevant alternatives and they are founded on a robust and credible evidence base.
Section 2
Policy Context

10. Natural building & roofing stone plays a major role in the UK economy by enhancing our living & working environments. It is also a vital part of our cultural heritage, which itself is a major asset for expanding leisure & tourism industries.

11. Natural stone has been used in buildings across the UK for more than a millennium. Its geological diversity across the country has resulted in a varied use of different stones, which is probably unrivaled anywhere else in the world.

12. However, since the late 19th century natural stone production has been declined. This is largely due to changes in architectural styles, the availability of cheaper alternatives such as brick, steel or concrete, and the importation of less expensive stone from Europe and elsewhere in the world (e.g. South America and South-East Asia).

13. Nevertheless, natural building & roofing stone has remained important to the building industry, particularly in respect of building conservation and high-grade architectural projects.

14. Without access to the “right” natural stone, our built environment will become devalued. Historic buildings and monuments would either fall into disrepair, or be inappropriately restored. For new buildings, local vernacular styles and distinctive local characters may become degraded. Whilst traditional building techniques and skills such as stonemasonry would be lost over time and consigned to historic technical manuals.

15. However, the working of natural stone is a non-renewable activity, which can result in adverse impacts on the environment and local amenity. Many of the country’s remaining natural stone resources lie within designated rural landscapes, which also need to be protected and where possible enhanced. In addition, natural stone quarries can often pose a number of difficult planning challenges such as poor access (resulting from pre-motor transport origins) and limited restoration (caused by inadequate older planning permissions, which do contain suitable conditions).

16. Consequently, a sound policy framework is needed to ensure the appropriate supply of natural building and roofing stone alongside the protection and enhancement of our valuable landscapes, natural environments and local amenities. This is addressed through national building stone and heritage policies, translated through the Regional Spatial Strategies (RSSs) and Local Development Frameworks (LDFs).
National Policy

17. National policy for minerals is set out in Minerals Policy Statement 1 (MPS1). However, Annex 3 to MPS1 sets out three specific objectives for natural building and roofing stone. These objectives are:

- To encourage the re-use of building and roofing stone, where technically feasible, on the building undergoing repair;
- To assess the need for small-scale extraction of quantities of stone for the conservation and preservation of historic monuments, buildings and areas within the context of the requirement to protect areas of designated landscapes, nature conservation and historic interest; and
- To enhance the overall quality of the environment once extraction has ceased, taking into account any benefits the site may have in terms of wildlife and geological conservation and safety, associated with public accessibility where possible and appropriate, and requirements for small quantities of stone that have to be extracted for future restoration and conservation purposes.

18. Annex 3 to MPS1 provides the policy mechanism for safeguarding natural building & roofing stone resources. It also refers to the key requirements for future stone supplies in terms of conservation and restoration, and for new build projects.

19. The Annex advises mineral planning authorities (MPAs) through their local development documents (LDDs), to identify important sources of building and roofing stone for safeguarding from other forms of development. Key factors that need to be considered include:

- The scarcity of resources in terms of their technical properties and / or aesthetic characteristics; and
- The identification of specific characteristics, which match those required for the repair and preservation of individual buildings, or groups of culturally important buildings.

20. In addition, MPAs should seek to extend their safeguarding policies to include those resources, which have not been used for some time. These may include historic quarry sites or “delves”\(^2\), which will require new planning permissions for future working.

21. In assessing the safeguarding potential of these sites, due consideration should be given to: - the original use of the stone in the construction of a specific historic building or monument; the technical compatibility with materials used in the existing structure being repaired; and the requirement for the stone for restoration and conservation purposes in the absence of viable alternative sources.

22. Where safeguarding of natural stone resources is the preferred option, MPAs must also take into account those other designations that may already exist on, or close to, safeguarded areas. These designations may be in respect of industrial archaeology, wildlife and geological conservation. As a result, proper regard should be given to the purposes of these designations both during and after possible extraction.

23. In terms of future supplies, Annex 3 advises that MPAs should have regard to local, regional and national need for certain building and roofing stone types, where they

\(^2\) The term “Delve” is used to describe small-scale and often shallow historic mineral workings, which resulted from a specific local building project or other mineral demand.
are specified due to their aesthetic or technical properties. Particular attention should also be paid to the advice provided by English Heritage in support of the objectives contained within PPG15\(^3\) (see paragraph 29 for more details).

24. For natural stone used in new build projects, MPAs must have regard to the local, regional and national need for certain stone types where their use is specified because of: proven durability; aesthetic or technical properties, particularly where new buildings are to be placed in the midst of older buildings constructed of a certain stone; and due to the requirements of local design guides, planning policies and supplementary planning documents.

25. A further requirement of Annex 3 is concerned with the identification of specific natural stone quarries. It clarifies that, as far as is practicable, known sites of importance to our built heritage should be highlighted in LDDs, whether they are active, inactive, dormant or without permission.

Regional Policy

26. Regional Planning Bodies (RPBs) are required within their Regional Spatial Strategies (RSSs) to set out policies for the safeguarding of nationally, regionally and locally significant building stone resources.

27. The emerging South West RSS does not include a specific natural building & roofing stone policy, but provides a brief commentary on natural building materials. It states that MPAs in the region should ensure that where natural materials are required to maintain the character of settlements or individual buildings, in line with sustainable construction policies, that due consideration should be given to the identification and efficient utilisation of locally derived mineral resources.

Local Policy

28. Strategic and local level policies for natural building & roofing stone in Gloucestershire are currently found within the Structure Plan 2\(^{nd}\) Review (1999) and Minerals Local Plan (1997-2006).

29. Policy M.9 of the Gloucestershire Structure Plan advises that provision should be made for the supply of limestone and sandstone for natural building stone where the need for local stone cannot be met by existing mineral workings and full account has been taken of all environmental factors.

30. Chapter 4 and Policy NE1 of the Gloucestershire Minerals Local Plan sets out the local policy for the supply of building stone in the county. It states that proposals for natural building stone by either extension to existing workings, new “greenfield” sites, or sites where no valid planning permission exists, should only be permitted where:

- The need for local stone cannot be met adequately from existing reserves and proposals are predominately for building stone purposes;

\(^3\) Planning Policy Guidance Note 15 (PPG15) sets out national land-use policy for the historic environment. It looks at the identification and protection of historic buildings, conservation areas, and other elements of the historic environment. It also explains the role of the planning system in their protection.
• The need for the stone and other planning benefits outweigh any adverse environmental, local amenity and other impacts;

• Crushing and screening of stone or overburden is confined to that removed in order to work natural building stone materials and which cannot be used in the landscaping or reclamation of the site; and

• They are in accordance with all other policies of this plan, particularly those relating to the environment, reclamation and development control.

Other Spatial Considerations

Emerging MCS - Issues & Options

31. The Issues & Options Report offered stakeholders their first opportunity to comment on the future of natural building & roofing stone in Gloucestershire. During the Issues & Options consultation and public minerals forums⁴, three headline issues were raised –

• Local stone being used to the benefit of the local built environment;
• Designated landscapes such as AONBs need to be protected from the impacts of quarrying; and
• Transporting local stone needs to be carefully managed to make sure impacts on local amenity and the rural highway network are minimised.

32. The Issues & Options consultation also provided stakeholders with the chance to review early options for managing natural building & roofing stone resources in the future. Three options were presented. The first looked at carrying forward the existing criteria-based policy for natural building stone from the adopted Minerals Local Plan, the second advised on a suite of new policies that focused on specific end-uses of natural building stone, and the third options sought to make provision for allocation sites for future mineral working.

33. The preferred option selected by stakeholders was a continuation of the existing criteria-based policy from the adopted Minerals Local Plan. This was followed by new policies for different end-uses.

Emerging MCS - Initial Sustainability Appraisal & Appropriate Assessment

34. The Initial Sustainability Appraisal looked at each of the early options set out within the Issues & Options consultation for the MCS.

35. The SA highlighted the benefits of the existing policy adopted by the Minerals Local Plan. It stated that this approach should allow for the supply of an essential resource, whilst ensuring environmental impacts are tested. It also concluded that the existing policy was broadly positive over the short to medium term when scored against the 15 SA Objectives of the SA framework. Likely major positive effects were also identified. These included benefits in terms of providing stone for sustainable housing, providing general supply, employment and the positive impact on certain tourist assets such as historic villages and conservation areas.

⁴ In July 2006, GCC undertook two public minerals forums to introduce headline issues & options for the emerging MCS. Information on the forum outcomes can be viewed on the GCC website via - http://www.gloucestershire.gov.uk/index.cfm?articleid=13348
36. Alternative options were also tested against the SA framework. Over the short-term, the proposed suite of new policies of different end-uses and the identification of preferred allocations for future working scored broadly positive against the SA objectives. Major positive effects included contributions to sustainable development in terms of employment provision and supporting tourist assets.

37. However, medium to long-term effects were considered to be uncertain as both alternative options could prove to be too prescriptive for ensuring supplies of building stone.

**Planning Policy Guidance Note 15 (PPG15)**

38. PPG 15 is the core government document for land-use planning and the historic environment. As already highlighted earlier in this report, it provides specific policies on the protection of historic buildings, conservation areas and other elements of the historic environment.

39. The supply of natural building & roofing stone is vitally important to the ongoing protection of the county’s historic built heritage. Therefore, the future provision of natural stone will need to carefully reflect the government’s objectives for the historic environment. This approach is clearly advocated within Annex 3 to MPS1 (see paragraph 17).

40. Ensuring that the means are available to identify what is “special” in the historic environment, determining its capacity for change and assessing the impacts of new development on the vitality and continued maintenance of the historic environment, are the key objectives set out in PPG 15. Particular focus is also given to the appropriate balance of economic growth, tourism and leisure opportunities and the long-term conservation of the built environment. It is also notes the desirability of using appropriate local materials for the alteration and repair of the historic environment.

41. The delivery of planning policies for the historic environment are the prime concern of district Local Development Frameworks (including those prepared by unitary authorities). However, MPAs should share in this process as part of their own “spatial planning” responsibilities.

42. Consequently, the MCS must give careful consideration to the potential implications of those local policies, which support the protection and enhancement of the built environment. These may result in a clear need for safeguarding of important natural building stone resources and / or provision to meet specific building stone demands.

**District Local Plans & Local Development Frameworks**

43. The district local plans prepared in Gloucestershire include land-use policies for the protection of the historic environment and the promotion of local distinctiveness in new development. A detailed list of local historic environment policies, currently in operation in Gloucestershire, is set out in Appendix B.
44. To help deliver these local plan policies, some districts have also produced a number of detailed supplementary planning guides, development briefs and character statements for conservation areas. Whilst these additional documents do not form part of the development plan, they act as important material considerations, which can influence development control decisions.

45. Consequently, the MCS will need to carefully review each relevant local plan policy and associated supplementary planning documents, to determine their influence on the future strategy for natural building & roofing stone. This follows on from the advice set out in Annex 3 to MPS1 (see paragraphs 15-23), where resource safeguarding and provision requirements should take account of the need for certain stone types within the local built environment. A detailed commentary on the opportunities for delivering this is provided in sections 4 and 5 of this report.

46. District level planning across the county is subject to the same fundamental review as minerals & waste policy. As a result each District Council is required to prepare a Local Development Framework (LDF) for their area. Similarly to previous local plans, LDFs must contain policies for a range of land-uses including housing, industry and employment.

47. However, the LDF process promotes a more “spatial” approach to planning, which should go beyond the traditional concerns of land-use. LDFs must look to embrace a wider range of proposals and strategies that may influence their areas. In terms of minerals, and in particular natural building & roofing stone in Gloucestershire, this approach will require greater collaboration between all relevant parties. This should enable more effective stewardship of the county’s built heritage and environment, which appreciates the availability of appropriate and environmentally acceptable supplies of natural stone.

AONB Management Plans

48. Management Plans must be prepared for all designated Areas of Outstanding Natural Beauty (AONBs). The purpose of these plans is to highlight the special qualities and importance of each designation and present an integrated vision for their future. The plans must also set out specific objectives and policies to help secure the vision and identify their delivery mechanism.

49. AONB Management Plans should play a significant part in the future of spatial planning in Gloucestershire as just over 50% of the entire County area is designated as an AONB. There are three designations in Gloucestershire; Cotswolds, Wye Valley and Malvern Hills. All of these AONBs have adopted Management Plans.

50. There is an extremely close relationship between the County’s AONB designations and resources of natural building & roofing stone. Most of Gloucestershire’s remaining reserves lie within, or adjacent to an AONB

5 The Cotswold AONB, Wye Valley AONB, and Malvern Hills AONB Management Plans were all adopted in 2004 and sought to plan for the five-year period to 2009. Each Plan is currently under review with a proposed publication by 2008.
designations. Furthermore, it is the use of natural stone within elements of the local built environment, that has helped define the special qualities of each designation. This is no more evident than in the Cotswold AONB, wherein;

"The importance played by the built environment in defining the character of the Cotswolds AONB cannot be stressed too highly. There is perhaps no other part of rural England where social & cultural factors - as manifest in built and constructed elements - are so central to the notion of local distinctiveness."

(Local Distinctiveness & Landscape Change Report for the Cotswold AONB – 2003)

51. The MCS will need to take into account the plans and proposed actions set out within each AONB Management Plan. This should help in establishing the future demand for local stone in the county and assessing the capacity for new working opportunities, where they are deemed necessary.

**English Heritage - Policy Statement on Minerals**

52. English Heritage (EH) is the Government’s advisor on the historic environment. In 2006, EH produced a draft policy statement on its locus and engagement in minerals issues. The statement sets out three perspectives:

- The historic significance of mining and quarrying sites;
- The Impacts on the historic environment caused by mineral extraction; and
- The need for and the supply of, natural stone and other materials to conserve the historic environment and maintain local distinctiveness.

53. In terms of managing the historic fabric and local distinctiveness, EH identifies four key policies (Policy P20 - P23). The first of these (P20) supports the continued working of certain minerals to maintain and repair significant aspects of the built heritage and to provide materials for new development which support local character, distinctiveness and diversity. The second policy (P22) provides a commitment to maintaining, preserving and enhancing EH’s own historic estate, and the final policy (P23) highlights the role of historic advisors in reconciling the need for mineral supplies against the potential adverse impacts of quarrying on the historic environment.

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6 As of 31/12/2005 61% of predicted permitted reserves of natural building & roofing stone were located within or adjacent to designated Areas of Outstanding Natural Beauty (AONBs).

7 In December 2006, English Heritage produced a consultation draft Policy Position Statement - Mineral Extraction and the Historic Environment. This document can be viewed at: http://www.helm.rg.uk
Section 3
Natural Building & Roofing Stone in Gloucestershire

54. The working of natural building & roofing stone is an important part of the mineral industry in Gloucestershire. It is required for the ongoing repair and maintenance of the county’s rich and diverse historic built environment and for supplying new-build and specialist, high-grade architectural projects.

55. Natural building & roofing stone in Gloucestershire provides for a diverse range of products. These include: architectural masonry, dressed, sawn and rough walling stone, kerbs and setts, sawn and rough paving, cladding for slate roofs, stone roofing, external landscaping materials, monument stone and other internal uses such as fireplaces and miscellaneous ornaments.

Natural Building & Roofing Stone Resources

56. Gloucestershire’s natural building & roofing stone resources are divided into two mineral types: - Limestone and Sandstone. These are separated over geological time and resource location across the county. The following paragraphs provide a brief overview of the different stone resources starting with the oldest and ending with the youngest over geological time.

57. The oldest natural building & roofing stone currently worked in Gloucestershire is derived from Devonian sandstone, which was deposited between 400 and 360 million years ago. Its known as the “Brownstone Formation” and is characterised by a deep purple / red and green stone colour. The resource outcrops in a north-to-south pattern within the Forest of Dean, starting at Mitcheldean and ending north of Lydney.

58. A similar aged sandstone known as the “Quartz Conglomerate Formation” also occurs in this locality. This sandstone is noted for its mix of substantial pebbles of quartz and igneous (volcanic) rock. Although examples of this stone can be seen in local buildings it has not been worked for some time.

59. The most significant building & roofing stone from within the Forest of Dean area comes from a series of Carboniferous sandstones known as the “Pennant Formation”. These sandstones were deposited around 360 to 280 million years ago.
ago and are characterised by the presence of Hematite or Iron Ore. This mineral creates a very distinct red veining effect through the stone. The resource is also described as a “harlequin” due to its variety of stone colours, which include blues, greys, greens and reds.

60. Carboniferous limestone, also sourced from the Forest of Dean, is a further local source of a natural building & roofing stone. However, the vast majority of this mineral is marketed as a crushed rock aggregate for the construction industry. More details about this resource can be found in Technical Papers MCS-B and MCS-G, which are concerned with crushed rock aggregate provision and the safeguarding of mineral resources respectively.

61. In the far northwest of Gloucestershire is a lesser known and younger resource of natural building & roofing stone. It is also sandstone, which is known as the “Bromsgrove and Bridgnorth formation”. This resource was deposited between 280 and 200 million years ago during the Permian and Triassic periods. Similar to the Quartz Conglomerate of the Forest of Dean (see paragraph 49) there are numerous examples of this stone being used in local buildings. However, the resource is currently only worked at a single site near to Bromsberrow as a source of aggregate. More information on this resource can be found in Technical Paper MCS-A, which relates to sand & gravel aggregate provision.

62. To the east of the river Severn, over a wide upland area called ‘The Cotswolds’ lies some of the most important and characteristic sources of natural building & roofing stone in Gloucestershire. This resource is made up of “Oolitic” limestone from the Jurassic period. This limestone was deposited between 200 and 130 million years ago.

63. The geological origins of “Oolitic” limestone make it an excellent source of natural building stone. It is derived from an accumulation of sea floor mud from a shallow sea, which occupied much of southwest England during the Jurassic period. This mud included large quantities of rounded, microscopic grains of calcium carbonate, created by the gentle rolling of tiny shell fragments by currents and waves. The fragments slowly became coated in successive layers of mud to produce grains called “Ooids”. It is these grains, which gives rise to the name “Oolitic” limestone.

64. Over many millions of years, thick and extensive Oolitic limestone beds have been created. The shape and size of the Ooids have made this type of limestone relatively easy to cut in any direction. They have also allowed for a smooth and precise finish, which is often termed as “freestone” by the traditional stone craftsmen.

65. In addition, the differences in the type of shelly materials available and their subsequent deposition, has resulted in many subtle variations across the Oolitic limestone resource. These variations can be seen in the texture, colour and quality of quarried stone, across different locations and even between different rock layers (also known as horizons) within a single quarry site.

66. In Gloucestershire, there are two distinct groups of Oolitic limestone: - The Great
Oolite and Inferior Oolite. These groups are separated by age and also by location.

67. The Great Oolite group is the oldest Oolitic limestone in the county and is believed to be between 200 and 150 million years old. It is an extensive resource, covering much of the southern and eastern area of the Cotswolds. It has a long and established use as a natural building & roofing stone with fine examples of its use in the historic city of Bath.

68. Although the geology of the Great Oolite is extremely complicated to define in terms of its different stone types, it is known to be an important source of traditional roofing stone known as “Stonesfield Slate” and “Forest Marble”. It is also the origin of a very well known landscaping stone called “Dagham stone”.

69. The younger, Inferior Oolite group is also an extremely varied resource that provides for an equally varied range of different stone types. The Inferior Oolite is estimated to be between 150 and 130 million years old. Whilst it occurs over a more restricted area than the Great Oolite, it reaches up to 100 metres in thickness near to Cheltenham. It is often referred to as the typical ‘Cotswold stone’ and there are many fine examples of its use in the market towns and villages of the northern Cotswolds. It is also known as the principal building material behind “Regency Architecture” exemplified within the town of Cheltenham.

70. Appendix C of this report provides an example list of the different local stone types derived from the Great and Inferior Oolite limestone groups of Gloucestershire. This list is not exhaustive and may not include all the stone types that have been worked. It is also worth noting that many of the stone types represent ‘relic’ stones, which have not been supplied locally for some time, or are no longer available in the UK. Furthermore, the name given to each stone could be subject to local variation.

71. Although Gloucestershire contains a wide range of often locally distinctive natural stone types, their respective resources are rarely confined to the administrative boundaries of the county. As a result where such favorable resources stretch into neighbouring areas, there are often examples of cross-boundary relationships. This can be seen from the supplies of natural stone from quarries in Gloucestershire to many building and conservation projects in the neighbouring areas of Wiltshire, Bath & North East Somerset and Oxfordshire.

72. Diagram 1 highlights the extent of natural building stone resources in Gloucestershire. It also sets out those resources, which stretch into neighbouring areas.

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9 Farmington Natural Stone Ltd has supplied stone from its quarry in Gloucestershire for a housing scheme in Biddestone, Wiltshire and the large re-development of Sydney Wharf in Bath. 
http://www.farmingtonnaturalstone.co.uk/projectofthemonth_mar ch.html (as of May 2007)

Natural Stone Markets Ltd also exemplifies the supply of its stone to several Colleges of Oxford University and the refurbishment of the ‘Alms Houses’ in Corsham, Wiltshire. 
http://www.cotswoldstone.co.uk/home.htm (as of May 2007)
Diagram 1: Natural Building & Roofing Stone Resources in Gloucestershire and Surrounding Areas

Forest of Dean Quarries (With permission for working Natural Building & Roofing Stone)

1. Stowfield 10. Monument
2. Clearwell 11. Nailbridge
3. Drybrook 12. Meazy Hurst
4. Birch Hill 13. Puddlebrook
6. Great Berry 15. Aston Bridge
8. Wilderness 17. Perseverance
9. Copes

Cotswold Stone Quarries (With permission for working Natural Building & Roofing Stone)

18. Stanleys 27. Brockhill 36. Park Farm
20. Hornsleasow 30. Syreford
22. Three Gates 32. Daglingworth
23. Oathill 33. Veizeys
24. Tinkers Barn 34. Swelwold
25. Huntsmans 35. Oxleaze
Natural Building & Roofing Stone Supplies

73. As at 31/12/2005, the supply of natural building and roofing stone from Gloucestershire was just less than 66,000 tonnes. The vast majority (91%) was sourced from the Jurassic limestone resource found in the Cotswolds. The remainder originated from the sandstone and limestone resources located in the Forest of Dean. No building stone supplies were derived from the Permian and Triassic sandstones located in the northwest of the county (see fig1).

Figure 1: Natural building & roofing stone supplied from Gloucestershire during 2005 by key resource locations

74. Over the five-year period from 2001 to 2005 inclusive, the supply of natural building & roofing stone from Gloucestershire has shown a fairly steady increase in output. Although there have been some local variations, the overall supply of stone increased by nearly 15,000 tonnes between 2001 and the end of 2005. The reason for this increase may be explained later in the section under paragraphs 107-110 concerned with building stone markets in Gloucestershire and Key Issues within Section 4.

75. An annual breakdown of natural building and roofing stone supplies between 2001 and 2005 inclusive can be found in Appendix A.

Natural Building & Roofing Stone Reserves

76. Due to the variability of the county’s building stone resources, particularly those found in the Cotswolds (see paragraphs 52-60) it has proved extremely difficult to provide an accurate level of permitted reserves, which remain within the county.

77. As well as having to contend with a wide range of different stone types within each of the key mineral resources, there are also considerable variations in the type of building stone products that can be produced. Furthermore, the variability in local resources can change significantly over a short space of time and within a relatively small area. Different layers / stone strata can become exhausted or revealed in a matter of weeks as quarry faces are worked through.

78. A further complication in determining reserves is concerned with the opportunity to extract different quarried products alongside building stone. This is a key issue with the county’s Carboniferous and Jurassic limestone, which also provides for a supply of crushed rock aggregate and small quantities of agricultural lime. Where
reserve assessments are carried out at relevant quarries it can prove extremely difficult to distinguish between which part of the reserve will prove suitable as a building stone, or for another quarried product.

Nevertheless, local operators are still actively encouraged to provide annual estimates of their non-aggregate reserves. These estimates cover all natural building stone products, and agricultural lime, where it is also worked.

As at 31/12/2005, non-aggregate reserves in Gloucestershire were estimated to be 3.8 million tonnes. Just over half of these reserves (53%) were sourced from the Jurassic limestone of the Cotswolds. The remainder comprised of the sandstone and limestone reserves from the Forest of Dean.

Remaining Years of the natural building & roofing stone Landbank

Based on the current rate of supply as at 31/12/2005, the county’s non-aggregate reserves could provide for up to 57 years of natural building & roofing stone working.

However, a degree of caution must be observed when considering this remaining landbank. The basic calculation does not take into account the issues raised previously concerning the complexity of the resource and opportunities of other non-aggregate quarry products such as agricultural lime. It also fails to appreciate the different building stone types and product requirements.

Consequently, a more realistic assessment of natural building & roofing stone reserves

must be carried out where the issue of remaining landbanks is raised. This may be achieved through a single site, or comparable sites review, where it is known that the same or similar stone types and / or products are quarried.

Natural Building & Roofing Stone Sites in Gloucestershire

As of 31/12/2005, 36 quarries held valid planning permissions for the working of natural building & roofing stone. Of these sites, 17 were in production during the year. This represents just under 50% of workable building stone sites in the county.

A detailed breakdown of productive and non-productive quarries is provided for in Appendix A. This also includes a 5-year review of the number of permitted sites and levels of activity from 2001 to 2005 inclusive.

The vast majority of the county’s natural building & roofing stone sites are distributed across the Cotswolds, particularly to the east of Cheltenham. However, there is also a strong concentration of operations within the Forest of Dean. Diagram 1 includes the distribution of building stone quarries with valid permissions during 2005.

As referred to in paragraph 61, there are also a number of historic / relic building stone quarries present in the county. Some of these sites could still contain workable building stone that may be required at some point in the future for certain specialist building and conservation projects. However, the re-opening and working of
these sites must be able to meet all modern operational standards and will need to obtain new planning permissions.

88. A list of historic / relic local quarries, which may have provided supplies of building stone in the past has been provided in Appendix D.

89. However, it is advised that this list is very much a starting point and will need to be revised over time. It is not exhaustive and is based upon survey work carried out for the “Review of Old Mineral Permissions (ROMPs)” required by the Environment Act 1995. Quarries closed sometime in the past, particularly before the advent of the UK planning system in 1947, have not been included. Nevertheless, close liaison with English Heritage, District conservation officers and the County Archaeology Unit may result in some more historic sites being added as potential building stone operations, subject to the necessary permissions.

Natural Building & Roofing Stone
Size and Scale of operations

90. Most natural building & roofing stone operations in Gloucestershire are small-scale and focused on the supply of local products for building conservation and more bespoke new building projects.

91. As demonstrated within paragraphs 73 and 84, many local quarries with permission are worked intermittently. This is due in part to the limited nature of the market for their particular quarried stone.

92. However, there are also some quarries, particularly within the Cotswolds area, which are more intensively worked. These sites are described as “hybrid building stone quarries” and are characterised by the complimentary working of crushed rock aggregate alongside building stone. This type of operation is attractive to many quarry owners as it provides more diverse and consistent revenue streams.

93. Nevertheless, these sites are not without controversy and should require careful consideration. There are a number of issues surrounding hybrid building stone quarries, which include:

- The rational and sustainable working of resources to their full potential;
- The increased potential for adverse amenity impacts (noise, dust, traffic etc.);
- The potential loss of valuable building stone to aggregate uses;
- The length of operations with landscaping impacts; and
- The loss of quarry material for restoration.

94. In Gloucestershire, the challenges posed by hybrid working are possibly more acute than elsewhere. This is due to the substantial coverage of designated and protected landscapes over much of the key mineral resources.
resource (i.e. Cotswold AONB). In addition, highway safety and management issues resulting from a limited rural road network represent a further compounding factor.

95. A small amount of building stone can also be attributed to the county’s crushed rock aggregate sites. However, supplies generated through these operations represent only a small proportion of their total annual output.  

Natural Building & Roofing Stone Techniques

Quarrying

96. Unlike aggregate quarrying, the use of blasting is limited (if used at all) in the production of natural building & roofing in Gloucestershire. This is due to the threat of shattering, which can render the stone unworkable or cause a reduction in its strength and resistance to weathering. However, where blasting does take place it is associated with the county’s limestone quarries that primarily produce crushed rock aggregate rather than building stone (i.e. Carboniferous Limestone in the Forest of Dean).

97. Most of Gloucestershire’s natural building & roofing stone is quarried by mechanical excavator, which takes advantage of discontinuities at the quarry face such as bedding planes and joints. However, where excavators cannot be used, stone is removed by hand using picks, jacks and hammers.

98. A further quarrying technique employed in Gloucestershire is that of “plug & feather”. This method is used to break down larger blocks of stone, which are too big to manage and / or transport. It involves the prising apart of the stone into smaller units using a system of driven wedges.

Processing

99. There are many different ways of processing natural stone. These directly relate to the quality of quarried materials and desired end-uses.

100. In Gloucestershire several processing techniques are employed. The simplest of these is known as splitting and breaking and is used to create rough walling stone and naturally “riven” paving. In the majority of cases this operation is carried out on-site either by hand or by using a basic stone guillotine.

101. More complex processing techniques of stone cutting and sculpting also take place in Gloucestershire. These involve the working of larger blocks of stone known as dimension stone, to create masonry, cladding and some types of paving products. Blocks are either cut or sawn down using heavy-duty frame saws and rotary blades, before being handcrafted by stonemasons into complex or ornate designs.

102. Due to the investment needed for specialist equipment and the limited availability of stonemasonry skills, dimension stone cannot always be worked on-site. As a result it is

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11 As at 31/12/2005, building stone derived from larger-scale crushed rock aggregate quarries accounted for approximately 8% of their total annual output. These crushed rock operations are referred to in more detailed within Evidence Report MCS-B.
often transported to stone yards in and nearby Gloucestershire for processing\textsuperscript{12}.

\textbf{103.} As previously mention in paragraph 61, building stone resources in Gloucestershire also represent an important local source of stone slates. Three different methods of production stone slates have been practiced in the County. Their use is linked to the characteristics of the stone being used and the technical skills available.

\textbf{104.} The first method of producing stone slates involves the laying out of quarried limestone for frost shattering between the winter months of November and January. The result of this process creates a very thin slate, which can be lightly worked by hand to create a roof stone called “Stonefield Slate”. The origins of this technique can be traced to the village of Stonefield in West Oxfordshire. It is very much an historic process, which is heavily dependant upon local weather conditions. Currently, there are no notable examples of Stonefield Slate production taking place in Gloucestershire.

\textbf{105.} The second method for producing stone slates is through the splitting by hand of “Forest Marble” limestone, shortly after it has been extracted from the ground. This is the oldest method of producing slates in the Cotswold area. Although it requires a degree of skill and timing to perfect, it is still practiced at a small number of local quarries.

\textbf{106.} The third and final method of producing stone slates is by the sawing of stone to thickness using frame saws and rotary blades. This method is less precise than the “splitting” of more traditional methods and does not always provide for the variety of stone slates. As a result some concern is expressed locally in applying mechanically cut stone slates to certain building and conservation projects\textsuperscript{13}.

\section*{Building Stone Markets in Gloucestershire}

\textbf{107.} As highlighted in earlier sections of this report, there are two principal markets for natural building & roofing stone – \textit{repair} of historic buildings and \textit{new build} projects.

\textbf{108.} In Gloucestershire, the repair of historic buildings is a significant driver of local demand. The county has a renowned and rich built heritage, which includes over 12,000 listed buildings and 264 conservation areas\textsuperscript{14}. A significant number of buildings and structures covered by one of the listings or which lie within a conservation area will at some point require new stone for repair and maintenance purposes.

\textsuperscript{12} Forest Stone Firms in the Forest of Dean imports local stone from Bamhill / Biohead Quarry (see diagram 1) to its stone works at Parkend near Lydney for processing into finished products and bespoke pieces of masonry. Cotswold Natural Stone Ltd exports stone from Oxleaze quarry near Cheltenham to its stone yard based at Shilton near Burford in Oxfordshire.

\textsuperscript{13} Cotswold District Council and Tewkesbury Borough Council Technical Notes on Stone Slate Roofing, both advise that: - Stone slates which have been sawn to thickness, rather than split, can be technically and aesthetically unacceptable and, if they fail to meet these criteria, should not be used on historic buildings.

\textsuperscript{14} Conservation Areas are designated under the terms of the Planning (Listed Buildings and Conservation Areas) Act 1990. They are areas of special architectural or historic interest that through the planning process should be ’preserved and enhanced’.
Despite the UK wide downturn in the production of building stone over the last 100 years or so (see paragraph 10), the local market has remained relatively constant. However, more recently there has been an upsurge in demand. This is due to the heightened public interest in building conservation, greater access to financial assistance (particularly through the heritage lottery fund) and a buoyant national economy. Planning policies and controls have also had an influence on the strength of this local market. This is demonstrated through district local plans and technical planning guides (see appendix B), wherein policy support is given for the use of natural local stone, where it will act as a direct or suitable replacement in the repair of the historic environment.

The other key market for local building stone is new build projects. This is concerned with maintaining vernacular styles and local distinctiveness through the greater use of local building materials. It also refers to the specific requirements of certain contemporary styles in both external and internal decoration (e.g. carved fireplaces, statues, ornaments and flagstones). Similar to the sector for historic stone, district planning policies look to encourage the use of local building stone, where it contributes to the quality of the built environment.

109. 

According to the Heritage Lottery Fund (LHF) over £3.6 billion has awarded to more than 22,500 building conservation projects across the UK since 1994.
Section 4
Key Issues facing Natural Building & Roofing Stone in Gloucestershire

111. As referred to in the previous section there has been a resurgence in the demand for natural building & roofing stone over recent years. This coincides with greater public awareness and interest in building conservation, more financial support for conservation practices and increased policy guidance and technical advice on using the ‘right’ materials in our built environment.

112. However, renewed interest in the use of natural building stone does not come without its own set of issues and challenges. As with all extractive industries, the working of natural stone is inherently unsustainable and relies upon ever decreasing resources. This is compounded by environmental and amenity issues and other conflicting development pressures, which can limit the availability of otherwise workable resources.

113. In the case of natural building stone there are also specific complexities that need to be taken into account. These are concerned with:

- The availability of specific requirements for certain building stone types and products;
- The balance of the rural economy and in particular, employment from quarrying, agriculture and tourism;
- The competing interests for mineral resources from other quarry market sectors (e.g. the use of natural stone resources for aggregates).

114. Natural building and roofing stone in Gloucestershire is by no means immune from the issues raised above. Consequently, this section of the report seeks to explore in more detail their specific local nature and relative significance in terms of the emerging MCS. For ease of consideration separate topic headings have been prepared:

Availability of the ‘right’ local stone

115. Gloucestershire is renowned for its rich and diverse built environment, which is characterised by wide variations in local natural building and roofing stone and vernacular styles. Many traditional local buildings were originally constructed using nearby materials, which include locally quarried stone. As Gloucestershire’s building stone resources demonstrate a complex and varied geology, it is often possible to identify the origins of local buildings due to the colour, texture, and weathering properties.
Consequently, to ensure the continued integrity and historic value of the county’s built environment, the use of the “right” local stone should be encouraged.

116. However, local provision for the different types of building stone of Gloucestershire can be extremely variable. This is due in part to the number of available quarries still in operation, planning and other constraints that restrict the extension to, and/or opening of new workings, and other land-use pressures that may sterilise un-worked or previously worked resources.

117. An important point to note is that many original sources of natural building and roofing stones are no longer worked and have been missing from the local market for sometime. Their source quarries also rarely benefit from extant planning permissions or meet current health and safety standards.

118. The varied availability of local building stone has undoubtedly had an impact on the supply and demand of different building stone products. In certain circumstances, this has contributed to a growing concern over “stone stripping”, which has taken place across parts of the county.\textsuperscript{16}

Protecting and Enhancing Designations

121. A significant proportion of Gloucestershire’s building stone quarries lies within or close to important landscape and other environmental designations (see footnote 5). Therefore, a fine balance needs to be struck between facilitating new working and ensuring the protection and enhancement of existing designations.

122. However, many of the county’s building stone quarries are historic in nature and have not been afforded the same degree of consideration and control as seen in more modern operations. Despite laudable efforts to improve matters through stricter new

\textsuperscript{16} Cotswold District Council has raised concerns over the stripping of stone slates from outbuildings and barns for use in historic repair and other new build projects. This issue was set out in the CDC’s response to the Issues & Options consultation in 2006. It was also an item discussed at the District’s Planning (Regulatory) Committee in December 2006.
permissions and condition reviews under the Environment Act 1995 (see footnote 9), many quarries retain examples of inappropriate and poor methods of working. These are represented by quarry face instability, a lack of appropriate infill materials, and an absence of a restoration, after-use and aftercare programme.

123. Consequently, a more pragmatic approach may be needed when considering new building stone applications, even where they may fail to meet certain local policy requirements. Under these circumstances a degree of weight should be given to the potential opportunities set out by the new proposal for improving site management, restoration, and the enhancement of any affected designations.

Changing Markets

124. Although there are well-established markets for natural building & roofing stone in Gloucestershire (see paragraphs 96-110), their relative importance to each other rarely remains the same from quarry to quarry. The specialist and often, localised demand for certain stone types can create notable differences in sales figures over a period of time. Furthermore, changes in both architecture and design fashions may result in new and / or expanded business opportunities or shrinking markets. This is particularly the case with the new build market, which includes ornamental pieces, fireplaces, garden landscaping products and high-grade architectural masonry.

125. Although responding to market changes is an expected part of a well-run business, a degree of caution needs be to taken by MPA in facilitating or supporting any notable shifts in the market. Particular attention should be paid to ensuring future supplies of building and roofing stone for historic repair purposes.

126. In Gloucestershire, there is some evidence that operators have sought to expand their businesses and product ranges to serve an ever expanding new build market.17

From Quarrying to Processing

127. Quarrying of any new mineral will require a significant degree of capital investment. This may include acquiring or leasing the site, obtaining relevant licenses & permissions, employing staff and developing site infrastructure.

128. However, the profitability and subsequent viability of certain smaller-scale operations, such as building & roofing stone is becoming more challenging with rising costs and increased controls and regulation.

129. In response to ever increasing economic pressures there has been a degree of consolidation in the ownership and / or operation of Gloucestershire’s building stone quarries.18 This has resulted in the development of local site networks that include several satellite quarries, which serve a central quarry with stone processing.

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17 The operators at Farmington, Brockhill, Veziey’s and Stanley’s quarries, all promote associated new-build products such as fireplaces, ornamental landscaping stone, and internal flooring slates along with more traditional stone walling and slate for historic repair and decoration.

18 Examples of consolidated building stone operations in Gloucestershire include: Cotswold Stone Quarries, which runs a total of four sites (Brockhill, Syreford, Swellwold, and Tinkers Barn) and Huntsmans, which also has four sites (Huntsmans, Three Gates, Homsleasow and Shenberrow).
or a designated stone yard. Within these types of operation, a number of activities including heavy-duty processing are only carried out at one centralised location. Stone is worked as and when it is needed and hauled from each of the satellite quarries for processing.

130. Although these types of network have a number of economic benefits in terms of reduced costs and economies of scale, they can pose a number of challenges. These include; increases in local haulage and associated amenity impacts, a potential increase in the lifespan of certain sites due to the husbanding of reserves, and the development of more permanent and substantial processing sites / manufacturing operations within rural locations.
Section 5
Natural Building & Roofing Stone Options

131. Like all other mineral resources, natural building and roofing stone can only be worked where it is found. Consequently, the options available for its future working are largely prescribed by the geological distribution of the resource and its relative viability across the county (See Section 2 and Diagram 1). Furthermore, additional limitations to working such resources may exist due to sterilisation by surface development, the availability of mineral infrastructure; accessibility to markets; and other engineering complexities (e.g. slope instability, flooding etc).

132. Nevertheless, as part of the county’s emerging strategy for minerals, the MCS will need to consider core policies which will ensure the successful management of natural building and roofing stone resources in the future.

133. Unlike other mineral policy areas such as aggregates, there are no overriding national or regional requirements to which the MCS must work to. This includes guidelines or targets as to the amount of natural building & roofing stone that will be required. Therefore due consideration should be given to those policy mechanisms that will support appropriate supplies of local stone to meet demand for historic repair & maintenance purposes and the wider quality of the built environment. These mechanisms include: -

- The safeguarding of resources;
- The use of policy criteria for assessing new proposals; and
- The allocation of preferred areas for the future working of natural stone.

134. Consequently, this section of the report aims to introduce policy options to stimulate early stakeholder debate. These options have been carefully assessed against national, regional and local policy influences (See Section 2) and key local characteristics (See Section 3) to ensure their realism and deliverability through the MCS.

135. It is also vitally important that the community is fully involved in the development of these options. Without effective community engagement and consensus building, it is unlikely that any option will be successful. Consequently, stakeholders are encouraged to let us know their thoughts and ideas on the draft options that have been developed. Furthermore, to reflect the comments already received during the “issues and options” consultation and mineral forums held in July 200619, viewpoints and ideas

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19 On the 11th and 18th July 2006 Gloucestershire County Council held two minerals forums to introduce to >>>
must also be incorporated into the drafting process (see paragraphs 31 –33).

136. At the preferred options stage stakeholders will also have an opportunity to make formal representations on their “favoured” option to be carried forward into the MCS.

137. For ease of consideration a commentary for each option has been prepared. These outline the different deliverable approaches that could realistically be applied to the future core policies of the MCS.

**OPTION 1:**

This option proposes to carry forward the existing building stone policy used in the adopted Minerals Local Plan: Policy NE1 (see paragraph 30). This policy sets out four criteria for which future building stone proposals must satisfy before they can be considered acceptable.

The criteria of policy NE1 provide a clear decision making framework for; the ‘need’ for local stone; outweighing benefits such as restoration, heritage and the local economy; the crushing and screening of stone often associated with aggregate production, and the other generic policy areas including the protecting of local amenity, the environment and transportation.

The continued application of the criteria for Policy NE1 should ultimately satisfy the national objectives for natural building & roofing stone. They may also provide sufficient scope to address the key local issues highlighted by this report.

In terms of delivery of option 1, it is recognised that the existing structure of Policy NE1 may not be compatible with the emerging MCS. Consequently a degree of reshaping may be necessary. However, the sentiments behind each of the criteria for policy NE1 will remain unchanged.

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**OPTION 2:**

Option 2 proposes an expansion of the existing building stone policy used in the adopted Minerals Local Plan. As highlighted in Option 1, the core criteria of this policy represent a potentially deliverable solution to managing the county’s natural building & roofing stone resources.

>>> stakeholders the key mineral issues facing the emerging MCS for Gloucestershire. A summary report of the forums can be viewed on the Council website: http://www.gloucestershire.gov.uk/media/adobeacrobat/c/6/MCS_Forum_Outcomes_Report.pdf
However, in its current form the policy may not take full advantage of the opportunity to develop a “spatial” planning approach for managing the county’s resources. Furthermore, the policy lacks “local distinctiveness” in terms of the key characteristics and circumstances of working building stone in Gloucestershire.

Consequently, option 2 proposes a number of additional elements alongside a re-shaping of the existing policy. These additional elements are set out below:

- The county’s key natural building & roofing stone resource areas (i.e. those which are likely to be developed during the MCS period) should be directly referenced within the core policy;

- Safeguarding of specific natural building & roofing stone resources should be introduced. This may include the safeguarding of active and inactive building stone quarries, and / or historic quarries deemed to be of sufficient worth in terms of the type(s) of stone that could potentially be worked. The inclusion of historic quarries will be wholly dependant upon evidence brought forward by operators, building conservation experts, English Heritage, and/ or local authority building conservation & heritage officers. It is also worth noting that this safeguarding approach will need to be linked to emerging core policies concerning Mineral Safeguarding Areas (MSAs) and Mineral Consultation Areas (MCAs) (see Technical Paper MCS-G for more details).

- A policy framework for hybrid-building stone quarries from within the Cotswold resource area should also be introduced. This will look at the applying of specific criteria or requirements focused on resource management, site restoration, local amenity impacts, highway movements and economic viability issues.

- A policy framework concerning the emergence of building stone quarry networks, off-site processing and stone yards should be incorporated into the MCS. This would look at the potential need for safeguarding and / or certain local policy advice regarding the impact of these ancillary operations on the timeframe on the working of remaining minerals at sites, restoration, the landscape & environment, local amenity and the highway network. However, it is important to note that the
The substantive element of certain ancillary / processing operations may not directly relate to mineral extraction. Consequently, a degree of joint working to develop a consistent policy approach will be needed with the respective district planning authority. Particular attention under these circumstances should be paid to emerging local development framework policies concerning rural economic vitality, diversification and the future development of rural-based industries.

**OPTION 3:**

Option 3 proposes a combination of resource safeguarding as highlighted in options 1 and 2 along with the allocation of specific preferred areas for the future working of natural building & roofing stone.

This option seeks to provide a greater degree of certainty in terms of securing future provision. However, due to the complexity of resources present in the county, preferred areas will only be considered where sufficient evidence is made available. This includes the geological reliability of resources identified and a clear demonstration of the need for the stone and / or particular stone products at a local, regional, or national level. Information will need to be forthcoming from interested stakeholders, such as prospective quarry operators, along with an assessment by English Heritage and local building conservation officers in respect of the need issue.
Glossary

**BROWNSTONE** - A type of sandstone used for building stone purposes. In Gloucestershire it occurs as a purple-red and green stone and outcrops in the Forest of Dean.

**BUILDING STONE** - Naturally occurring rock, which is sufficiently consolidated to enable it to be cut or shaped for use as a walling, paving or roofing material.

**CARBONIFEROUS** - A major division of geological time. It approximately covers the period between 360 and 280 million years ago.

**COMMUNITIES AND LOCAL GOVERNMENT (DCLG)** - The Government department responsible for spatial planning and other local government matters.

**CORE STRATEGY** - Sets the long-term spatial vision and strategy for the local planning authority area and provides the strategic locations for future development opportunities.

**CONGLOMERATE** - A rock that consisting of individual stones that have become cemented together.

**DEVONIAN** - Is a geological period spanning from roughly 420 to 360 million years ago.

**DEVELOPMENT PLAN** - Sets out the policies and proposals for development and the use of land within the local planning authority area.

**DEVELOPMENT FRAMEWORK** - A non-statutory term for describing the folder of documents, which includes all the local planning authority’s local planning documents.

**FREESTONE** - Any stone that can be freely worked in any direction.

**JURASSIC** - A major division of geological time. It covers the period between 200 and 130 million years ago.

**LANDBANK** - The stock land with planning permissions but where development has yet to take place. Landbanks are commonly used for land, minerals, housing.

**MASONRY STONE** - Used in construction and is more often bonded with mortar. It can be structural or as a cladding or paving.

**MINERAL PLANNING STATEMENTS (MPS)** - Guidance documents, which set out national policy for minerals.

**OOLITIC LIMESTONE** - A carbonate rock mostly of ooliths (or ooids), which are sand-sized carbonate particles that have concentric rings of CaCO$_3$ (Calcium Carbonate). These rings are formed around grains of sand or shell fragments that were rolled around on the shallow sea floor, gathering layer after layer of limestone.

**PENNANT SANDSTONE** - The term used to cover all sandstone quarried from the Carboniferous period that outcrop in South Wales and the Forest of Dean in Gloucestershire.

**PERMIAN** - A relatively short period of geological time between 280 and 250 million years ago.

**PREFERED AREA** - Areas identified in the development plan with a high degree of certainty for potential development / extraction (*in the case of minerals*).

**RESERVES** - Known mineral deposits with the benefit of planning permission for extraction.

**RESOURCES** - A potential mineral deposit where the quality and quantity of material has not been fully tested. Resources do not benefit from planning permission.

**SOUTH WEST REGIONAL SPATIAL STRATEGY (RSS)** - The 20-year spatial strategy for the South West region.

**SPATIAL PLANNING** - Spatial planning goes beyond traditional land use planning to bring together and integrate policies for the development and use of land with other policies and programmes which influence the nature of places and how they function.

**TRIASSIC** - Is a relatively short geological period from roughly 250 to 200 million years ago.
Appendix A
Natural Building & Roofing Stone Information

Natural Building & Roofing Stone - Supply data 2001 - 2005

<table>
<thead>
<tr>
<th>Supply Year</th>
<th>Sourced from the Cotswolds</th>
<th>Sourced from the Forest of Dean</th>
<th>Total Supply</th>
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</thead>
<tbody>
<tr>
<td>2001</td>
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<td>57,144</td>
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</tr>
<tr>
<td>2005</td>
<td>59,495</td>
<td>6120</td>
<td>65,615</td>
</tr>
</tbody>
</table>

Data provided in tonnes unless otherwise stated

Natural Building & Roofing Stone Sites Data 2001 - 2005

<table>
<thead>
<tr>
<th>Supply Year</th>
<th>Number of Sites in the Forest of Dean</th>
<th>Number of Sites in the Cotswolds</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>In production</td>
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<td>In production</td>
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</tr>
<tr>
<td>2005</td>
<td>9</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>
Appendix B
Local Policies and Technical Advice on the Protection of the Historic Environment in Gloucestershire (excluding policies regarding demolition of historic buildings)

Cheltenham Borough Local Plan (Adopted June 2006)

POLICY BE.10 - RESIDENTIAL CHARACTER IN CONSERVATION AREAS
POLICY BE.16 - BOUNDARY ENCLOSURES IN CONSERVATION AREAS
POLICY BE.21 - BACK LANCES IN CONSERVATION AREAS
POLICY BE.26 - ALTERATION OF LISTED BUILDINGS
POLICY BE.28 - BOUNDARY ENCLOSURES TO LISTED BUILDINGS

Cotswold District Local Plan (Adopted April 2006)

POLICY 13 - DEVELOPMENT AFFECTING A LISTED BUILDING OR ITS SETTING
POLICY 14 - CONSERVATION OF HISTORIC AGRICULTURAL BUILDINGS OF TRADITIONAL DESIGN
POLICY 15 - CONSERVATION AREAS

Other Supplementary Planning Guides & Documents prepared by Cotswold DC

COTSWOLD DESIGN CODE
COTSWOLD STONE SLATE ROOFING - Technical guidance for owners and occupiers
TRADITIONAL CHIMNEYS - Technical Guides 1 & 2
A GUIDE TO THE CONSERVATION OF HISTORIC FARM BUILDINGS

Forest of Dean District Local Plan (Adopted November 2005)

POLICY FHE.1 - PRESERVATION AND ENHANCEMENT OF CONSERVATION AREAS
POLICY FHE.3 - ALTERATIONS TO LISTED BUILDINGS AND THEIR SETTINGS
Gloucester City Local Plan (Revised Deposit Draft August 2002²⁰)

POLICY BE.22 ALTERATIONS TO AND DEVELOPMENT WITHIN THE CURTILAGE OF LISTED BUILDINGS
POLICY BE.23 DEVELOPMENT AFFECTING THE SETTING OF LISTED BUILDINGS
POLICY BE.26 RELAXATION OF POLICIES
POLICY BE.28 LINKING ENABLING DEVELOPMENT TO THE HERITAGE OBJECTIVES
POLICY BE.29 DEVELOPMENT WITHIN CONSERVATION AREAS
NEW POLICY BE 30A CONTROL OF REDEVELOPMENT WITHIN CONSERVATION AREAS

Stroud District Local Plan (Adopted November 2005)

POLICY BE3 - DESIGN OF BUILDINGS
POLICY BE5 - DEVELOPMENT AFFECTING CONSERVATION AREAS
POLICY BE6 - ALTERATIONS AND EXTENSIONS AFFECTING UNLISTED BUILDINGS IN CONSERVATION AREAS
POLICY BE10 - ALTERATIONS AND EXTENSIONS AFFECTING LISTED BUILDINGS
POLICY BE12 - DEVELOPMENT AFFECTING THE SETTING OF LISTED BUILDINGS

Tewkesbury Borough Local Plan (Adopted March 2006)

POLICY HEN1 - CONSERVATION AREAS (General)
POLICY HEN2 - CONSERVATION AREAS (Setting and Impact)
POLICY HEN3 - CONSERVATION AREAS (Features in Conservation areas)
POLICY HEN9 - HISTORIC COURTS & ALLEYWAYS
POLICY HEN10 - REPAIR OF LISTING BUILDINGS
POLICY HEN11 - ALTERATIONS TO LISTING BUILDINGS
POLICY HEN15 - BOUNDARIES TO LISTING BUILDINGS
POLICY HEN16 - BUILDINGS OF LOCAL INTEREST

Other Supplementary Planning Guides & Documents prepared by Tewkesbury BC

COTSWOLD STONE SLATE ROOFING - Technical guidance for owners and occupiers
TRADITIONAL CHIMNEYS – Technical Guides 1 & 2

²⁰ The Revised Deposit Local Plan (2002) was approved for Development Control purposes (i.e. determining planning applications) in August 2002. It will continue to act for this purpose until it is replaced by relevant Local Development Framework documents for the area of Gloucester City.
Appendix C
Natural Building & Roofing Stone Types
From the Oolitic Limestone Series of Gloucestershire

Great Oolite Limestone Group
Chipping Norton Stone
Combrash
Dagham Stone
Fullers Earth
Forest Marble
Hampen Stone
Taynton Stone
Througham Tilestones
Stonesfield Slates
Eyford Stone
White Limestone

Inferior Oolite Limestone Group
Crickley Limestone (Pea Grit)
Lower Freestone (Birdlip Stone)
Guiting (Yellow) Stone
Notgrove Freestone
Oolite Marl & Upper Freestone
Salperton Stone
Witchellia Stone (Cleeve Hill Stone)
Appendix D
Historic / Relic Quarries in Gloucestershire

IMPORTANT INFORMATION: The quarries listed below represent old mineral workings in Gloucestershire, which no longer contained valid planning permissions. These quarries were once worked for building stone amongst other quarried products such as aggregates and agricultural lime and would have likely contributed to the different types of building stone supplied in the county. Whilst there are existing quarries, which produce the same or similar stone types to those found at a number of the sites listed, there may be historic / relic quarries that represent the only local source of a certain stone type, which could be required in the future. Consequently, the inclusion of these sites within this technical report may assist in the development of a deliverable safeguarding policy for ensuring the necessary diversity in local building stone types.

It is also important to acknowledge that the list is not exhaustive. It is based on the survey work carried out as part of the “Review of Old Mineral Permissions (ROMPs)” which was required under Environment Act 1995. The survey looked to identify those sites in the county, which ceased to include a valid planning permission as a result of revocation. Decision on this basis were made under paragraph 12 of MPG14, which stated that planning permissions which were no longer capable of implementation, had time expired, or had been worked out and restored should be discounted from future review and thus ended.

Furthermore, it is also important to note that more historic workings, which operated and subsequently closed prior to the advent of the planning system in 1948, are not included in the list. However, as evidence becomes available particularly from English Heritage and the County’s Archaeology Unit, additional sites need to be added.

The list is divided between the generic resource groups of:

Carboniferous (Forest of Dean) Limestone, Jurassic (Cotswold) Limestone, and Forest of Dean Sandstone.

Carboniferous (Forest of Dean) Limestone
Bearse, Bluestone (aka Proberts Farm), Boatwood, Clearwell (Village Site), English Bicknor, Edge Hill, Gelders Wood, Hawthorns, Howbeach, Little Drybrook, Plump Hill, Staunton, Stowfield Farm, Tidenham Chase, Whitecliff, Woodcroft (aka Lancau), Worrels

Jurassic (Cotswold) Limestone
Bath Road, Tetbury, Bourton, Breakheart, Burleigh, Broadfield Farm (aka. Lodge Park), Cats Abbey, Catsbrain, Cirencester Road, Coln Lane Ground, Coates (aka. Jarvis Quarry), Coopers Hill, Cotstone (aka Longhill), Dean (aka Chedworth), Edge, Fish Inn, Forest Green, Foss Cross, Gawcombe, Hampen Farm, Harvey’s Grave, Hillbarn (aka Snowshill)
### Jurassic (Cotswold) Limestone cont.

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<thead>
<tr>
<th>Location</th>
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<tbody>
<tr>
<td>Honeycombe Leaze</td>
<td>Pyke</td>
<td>Station Road</td>
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<tr>
<td>Ilsom Farm</td>
<td>Quarhouse</td>
<td>Stratton</td>
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<tr>
<td>Jackdaw</td>
<td>Ready Token</td>
<td>Sunhill</td>
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<td>Kilkenny</td>
<td>Salperton</td>
<td>Welsh Way</td>
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<td>Leckhampton</td>
<td>Sheepridge</td>
<td>Vatch Lane</td>
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<td>New Park</td>
<td>Slade</td>
<td>Winterwell</td>
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<tr>
<td>Orchard Farm</td>
<td>Smiths Cross</td>
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### Forest of Dean Sandstone

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<tr>
<th>Location</th>
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<tbody>
<tr>
<td>Addis Hill</td>
<td>Hangerberry</td>
<td>Spion Kop</td>
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<td>Birch Hill</td>
<td>Howbeach</td>
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<tr>
<td>Brand Green</td>
<td>Howlers Hill</td>
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<tr>
<td>Collafield (aka Greenway)</td>
<td>Howlers Slade</td>
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<tr>
<td>Darkhill</td>
<td>Knockley</td>
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<td>Eastbach</td>
<td>Lambquay</td>
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<td>Edge Hill (aka Hazel Hill)</td>
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<tr>
<td>Gorsy Knoll</td>
<td>Miss Grace’s Lane</td>
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<tr>
<td>Forest of Church</td>
<td>Sterry</td>
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