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FIGURES

Figure 3.1: Mendip Quarries
Figure 3.2: 30 mile radius around Mendip Quarries
Figure 3.3: Layers required within an average road
Figure 3.4: The shared UK principles of sustainable development

Figure A1: Battscome designations and constraints
Figure A2: Callow Rock designations and constraints
Figure A3: Cloford designations and constraints
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APPENDICES

(Confidential Appendices are contained in the Confidential Annex)

Confidential Appendix 1: Site Proformas
Appendix 2: Questions for Site Operators
Confidential Appendix 3: Aggregate Use and Market per Active Quarry
Confidential Appendix 4: Site Sustainability Assessment
### Glossary

**Active**
Used to describe a quarry that is currently operational.

**Bench**
The rock face of a quarry generally contains a number of large steps, each between 10m and 20m high. Each step is referred to as a bench.

**Dormant**
Used to describe a quarry that is not operational and will require planning permission, revised conditions and/or licensing to be agreed before work is allowed to commence on site.

**Landbank**
A stock of mineral reserves within a particular planning authority area with a valid planning permission for extraction. Government guidance is for a landbank of at least ten years to be maintained for crushed rock and seven years for sand and gravel.

**Inactive**
Used to describe a site that is not currently operational, but has up-to-date planning permissions and licences so that it could be reopened at any time.

**Reserve**
The section of the resource for which planning permission for extraction has been granted.

**Resource**
Describes the available source of aggregate in geological terms (with no reference to the viability of extraction).

**Scalpings**
Undersized quarry waste i.e. a mix of rock, sand and mud. Scalpings can be reprocessed to extract saleable material.

### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>AONB</td>
<td>Area of Outstanding Natural Beauty</td>
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<tr>
<td>AQMA</td>
<td>Air Quality Management Area</td>
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<td>CLG</td>
<td>Department for Communities and Local Government</td>
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<td>CWS</td>
<td>County Wildlife Site</td>
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<td>EA</td>
<td>Environment Agency</td>
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<td>GIS</td>
<td>Geographical Information Systems</td>
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<td>Health and Safety Executive</td>
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<td>Interim Development Order</td>
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<td>Land Use Consultants</td>
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<td>Minerals Policy Statement</td>
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<td>PPS</td>
<td>Planning Policy Statement</td>
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<td>PSV</td>
<td>Polished Stone Value</td>
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<td>RAWWP</td>
<td>Regional Aggregate Working Party</td>
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<td>ROMP</td>
<td>Review of Old Mineral Planning Permissions</td>
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<td>SAC</td>
<td>Special Area of Conservation</td>
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<td>SAM</td>
<td>Scheduled Ancient Monument</td>
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<td>SMLP</td>
<td>Somerset Minerals Local Plan</td>
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<td>SPA</td>
<td>Special Protection Area</td>
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<td>SPZ</td>
<td>Source Protection Zone</td>
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<tr>
<td>SSC</td>
<td>Somerset County Council</td>
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<td>SSSI</td>
<td>Site of Special Scientific Interest</td>
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1. INTRODUCTION

1.1. Land Use Consultants was commissioned by Somerset County Council to undertake a review of the crushed rock aggregate quarries in the Mendips in order to identify quarries that should be considered for allocation as strategic sites. An assessment of the sustainability implications of the sites considered was also undertaken, to help inform the Minerals and Waste Development Framework.

1.2. Somerset County Council (SCC) is in the initial stages of producing their Minerals and Waste Development Framework. The Framework will contain a Minerals Core Strategy, which will set out policies for aggregates, peat and building stone in Somerset over the plan period 2013 to 2028 and identify strategic sites for aggregates.

1.3. Although the Minerals Core Strategy covers issues relating to aggregates, peat and building stone within Somerset, this study solely considers crushed rock aggregate from the Mendip Hills. There are two crushed rock quarries located outside this area near Bridgwater (Castle Hill, an active site and Cannington Park, an inactive site) but they are small in output and reserve when compared with the Mendip quarries and exist to serve a local market, and therefore have not been considered further in this study.

1.4. Hard rock has also historically been extracted for aggregate in the Quantocks (only one dormant site remains), however designation of 25kms$^2$ of the Quantock Hills as a Site of Special Scientific Interest (SSSI) and the area as an Area of Outstanding Natural Beauty (AONB) has led to the decision by SCC that extraction within the Quantocks is not desirable for the future.

BACKGROUND TO THE STUDY

1.5. Somerset has a long history of minerals extraction, which continues to be a significant source of employment in the county today (the minerals industry amounts to approximately 0.5% of Gross Value Added in the South West region as a whole). The Carboniferous limestone of the Mendip Hills is of national significance as a strategic resource of hard rock aggregates, serving not only the needs of Somerset but the rest of the South West region, London and the South East.

1.6. In accordance with Planning Policy Statement 12 (PPS12): Local Spatial Planning, Core Strategies may allocate strategic sites that are considered central to the achievement of the Strategy and where investment requires a long lead-in. Due to the local, regional and national significance of crushed rock aggregate from the Mendips, SCC took the view that the Core Strategy may need to identify strategic sites and so commissioned this study.
2. CONTEXTUAL FACTORS

2.1. In developing the methodology for the identification of strategic sites, a number of factors that could influence the project were recognised. This section of the report describes these factors, explains their potential influence on the study and indicates whether they were considered further.

EXISTING LANDBANK

2.2. In order to ascertain the ability of the existing quarries within the Mendips to be able to continue to provide crushed rock aggregate throughout the Minerals Core Strategy plan period, an indication of the remaining permitted reserves, also known as the landbank, is required.

2.3. The Department for Communities and Local Government (and its predecessors) has commissioned four yearly Aggregate Minerals Surveys in England and Wales since 1973. The surveys provide in-depth and up-to-date information on the regional and national sales, inter-regional flows, transportation, consumption and permitted reserves of primary aggregates.\(^1\) The latest survey (AM2009, due to be published early 2011) contains the permitted reserve figures (landbank) for each mineral planning authority (MPA), as provided by each MPA through consultation with quarry operators.

2.4. As reported through this process, Somerset had permitted reserves of 337.1\(\text{mt}\) at the end of 2009. This figure can be extrapolated using annual sales figures to provide an estimate of the permitted reserves that will remain at the start of the plan period (start of 2013).\(^2\)

2.5. According to the 2006 and 2007 South West Regional Aggregate Working Party (RAWP) Reports, Somerset produced 11.22\(\text{mt}\) of crushed rock aggregate in 2005, 11.9\(\text{mt}\) in 2006 and 12.38\(\text{mt}\) in 2007. Of the 12.38\(\text{mt}\) produced in 2007, 5.8\(\text{mt}\) were exported by rail from two quarries (Torr Works and Whatley Quarry), of which only 0.3\(\text{mt}\) were destined for short haul locations (i.e. to destinations in the South West)\(^3\).

2.6. The RAWP Report data shows that the average annual sales figure between 2005 and 2007 was 11.83\(\text{mt}\). Using this figure as an estimate of the annual sales in 2010, 2011 and 2012, assuming that no additional reserves have been or will be granted planning permission in this period, the permitted reserves (or landbank) in Somerset at the start of 2013 can be estimated at 301.61\(\text{mt}\) (i.e. 337.1\(\text{mt}\) minus three times 11.83\(\text{mt}\)).

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1 Department for Communities and Local Government website (accessed December 2010): http://www.communities.gov.uk/planningandbuilding/planningbuilding/planningresearch/researchreports/mineralswasteresearch/aggregatemineralssurveys/

2 This figure includes two crushed rock quarries outside the Mendips: Castle Hill and Cannington Park. However, as both sites are small in output and reserve when compared with the Mendip quarries and exist to serve a local market, their inclusion within the landbank but exclusion from this study is not judged be significant in terms of affecting the study's findings.

2.7. In accordance with Minerals Policy Statement 1: Planning and Minerals\(^4\) (MPS1), the 2009 Aggregate Minerals Survey landbank figure reflects all permitted reserves with a valid planning permission. This excludes dormant sites without agreed working conditions, as defined under the Planning and Compensation Act 1991 and the Environment Act 1995. Such sites need to agree new working conditions with the MPA before they can recommence working, hence they do not have a valid planning permission. All sites referred to as dormant in this study fall under this definition and are not included in the landbank figure for Somerset.

2.8. The use of a landbank as defined in MPS1 is to provide an indicator of when new permissions for aggregates extraction are likely to be required. For crushed rock the minimum landbank required is 10 years. MPS1 also states that:

“MPAs should consider and report on the need to review policies in their LDDs as part of their annual monitoring report to the Secretary of State… …If review and updating takes place regularly then maintaining a landbank beyond the end of the plan period is not an issue.”

2.9. The Annual Monitoring Reports produced by SCC and annual RAWP reports provide a regular means for such a review to be undertaken. In addition, minerals operators can submit planning applications which, if granted consent, allow additions to the landbank as needed.

2.10. After consideration of MPS1, it was agreed with SCC that, for the purpose of this study, calculations should be based on a 25 year landbank, covering the emerging Somerset Minerals Core Strategy plan period from the start of 2013 to the start of 2028, plus provision for a 10 year landbank to be in place at all times during the plan period.

2.11. The implications of the estimated permitted reserves and the required landbank for the study is described further in Section 3.

HEALTH AND SAFETY REGULATIONS

2.12. Access to permitted reserves may be affected by revisions to the Approved Code of Practice (ACOP) to the Quarries Regulations 1999 that are currently proposed by the Health and Safety Executive. The revisions include incorporation of risk-based guidance on safe quarry face management, replacing the current prescriptive approach. This new approach could require bench heights of existing sites to be reduced, and/or bench widths to be increased, both of which would decrease the overall slope of quarries. In turn, this would reduce the amount of permitted reserves that can be extracted by operators.

2.13. As the impact of the revisions to the ACOP to the Quarries Regulations 1999 is still uncertain, this issue has been highlighted here for information only and as a reminder that it may need to be considered at a later point in the Minerals Core Strategy development process.

\(^4\) Department for Communities and Local Government (November 2006) Minerals Policy Statement 1: Planning and Minerals
ON SITE STERILISATION

2.14. Discussions with the quarry operators raised the issue that access to the permitted reserves could be affected by on site sterilisation. This may be the result of processing plant or equipment sitting on top of permitted reserves, or the result of a stockpile or scalpsings pile situated on top of, or obstructing access to, permitted reserves. However, constraints on permitted reserves such as this should have been taken into account by the quarry operators when providing SCC with the reserve figures for the four-yearly Aggregate Minerals Survey (AM2009). As such, this issue has not been considered further.

ENVIRONMENT AGENCY REGULATIONS ON DEWATERING

2.15. The 2003 Water Act provides for the removal of the existing exemption from water abstraction licence regulations for dewatering associated with mines, quarries and other underground activities. Implementation of this element of the Act has been postponed. However, when the new regulations are implemented mineral operators will require one, or both, of two different licence types: a Transfer Licence and/or a Full Licence.5

2.16. A number of quarries in the Mendips extract rock from below the water table, which requires dewatering. In the event that an application for a dewatering licence for one of these quarries is refused by the Environment Agency (as the statutory body for the licences), the quarry operator would not be able to continue working below the water table i.e. the permitted reserves below the water table would be sterilised.

2.17. There is still uncertainty regarding many elements of the new regulations; therefore they are highlighted here only as an issue for future consideration during the Minerals Core Strategy development process.

FUTURE MAJOR PROJECTS

2.18. The future demand for crushed rock aggregate from the Mendips could be affected by two future major projects in the area: Hinkley Point C nuclear power station and the Severn Tidal Project (although it is noted that central government ruled out construction of a Severn Tidal Project ‘at this time’)6. However, consideration of the influence of such aggregate intensive projects must also allow for the fact that Somerset has provided aggregates for major infrastructure projects in the past (such as the Olympics 2012 and Heathrow Terminal 5) without the need for additional sites being identified or output limits for existing sites increased. Also, the aggregate requirements for Hinkley Point C nuclear power station may be supplied from further afield e.g. transported by sea from Scotland.

2.19. Taking all considerations into account, it was judged that the demand for crushed rock aggregate from future major projects will not materially influence the Minerals Core Strategy.

6 Department for Energy and Climate Change (18th October 2010) Press Release 2010/107
SUPPLY FROM RECYCLED AND SECONDARY AGGREGATES

2.20. There is expected to be a rise in the provision of recycled and secondary aggregates in the future, which could reduce the amount of primary aggregate required (although the rise is expected to plateau at some point due to the finite quantity of alternatives to primary aggregate being available). The effect of the rise is addressed at the national level through production of the National and Regional Guidelines for Aggregate Provision in England, which takes account of the potential for secondary and recycled aggregate production when generating regional primary land-won aggregate apportionment figures.

ALTERNATIVE APPORTIONMENT FIGURES

2.21. The Department of Communities and Local Government (DCLG) issued advice in July 2010 regarding sub-regional apportionment figures. On the day that the Secretary of State announced the revocation of Regional Spatial Strategies (6th July 2010), DCLG issued advice in a letter to Chief Planning Officers stating that:

“Minerals planning authorities will have responsibility for continuing to plan for a steady and adequate supply of aggregate minerals to support economic growth. They should do this within the longstanding arrangements for minerals planning. Technical advice provided by the Aggregate Working Parties, including their current work in sub-apportioning the CLG guidelines for 2005-2020 to planning authority level will assist with this.... Planning authorities can choose to use alternative figures for their planning purposes if they have new or different information and a robust evidence base. We will work with the minerals industry and local government to agree how minerals planning arrangements should operate in the longer term”.

2.22. Thus it is open for individual planning authorities, or groups of authorities, to formulate alternative annual demand figures. At the time of writing this report, SCC, along with the MPAs who form the South West RAWP (SWRAWP), had submitted alternative sub-regional apportionment figures for each South West MPA to DCLG based on existing evidence and were awaiting a response. At this time, beyond the revised figure submitted, SCC are not intending to develop a new evidence base for either primary or secondary and recycled aggregate provision in the county.

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7 The forecasting model used for the National and Regional Guidelines for Aggregate Provision in England 2005-2020 applied an assumed contribution of alternatives to primary aggregates of 62mt per annum.
8 This announcement has since been judged to be unlawful and therefore Regional Strategies (as the Regional Spatial Strategies became on 1st April 2010 under Section 70 of the Local Democracy, Economic Development and Construction Act 2009) remain for the time being part of the development plan and relevant to the determination of planning applications.
3. METHOD AND FINDINGS

3.1. The methodology for the identification of strategic sites followed five key steps:

**Step 1**: Definition of the term ‘strategic’

**Step 2**: Identification of the sites to be considered in the study

**Step 3**: Assessment of demand and output restrictions

**Step 4**: Identification of strategic sites

**Step 5**: Assessment of sustainability implications

3.2. An explanation of each step and the judgements made are explained below, with the conclusions drawn provided in Section 4.

**STEP 1: DEFINITION OF STRATEGIC SITES**

3.3. The first step to identify strategic crushed rock aggregate sites in the Mendips was to define the term ‘strategic’. Planning Policy Statement 12: Local Spatial Planning (PPS12)\(^9\) defines strategic sites as those sites considered central to the achievement of the core strategy.

3.4. The aim of the Minerals Core Strategy is to “review and update the policies of the Somerset Minerals Local Plan, establish the vision, core strategy and strategic policies for meeting demands / sub-regional apportionment for mineral resources”. Taking this and the definition of strategic included within PPS12 into account, it is clear that any strategic sites identified within the Minerals Core Strategy must be considered central to meeting the demand / sub-regional apportionment for mineral resources over the Minerals Core Strategy plan period (assumed to be 2013 to 2028 for the purpose of this study, plus a 10 year landbank).

**STEP 2: SITES CONSIDERED IN THE STUDY**

3.5. The second step was to identify those sites to be included within the study. There are currently eight active quarries in the Mendips, one inactive quarry (Shipham Hill) and ten dormant sites; all are listed in Table 3.1 and shown in Figure 3.1.

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\(^9\) Department for Communities and Local Government (June 2008) Planning Policy Statement 12: Local Spatial Planning
Table 3.1: Aggregate quarries in the Mendips

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<tr>
<th>Aggregate Quarries</th>
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<th>Mineral</th>
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<td></td>
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<tr>
<td>Battscombe</td>
<td>Hanson</td>
<td>Limestone</td>
</tr>
<tr>
<td>Callow Rock</td>
<td>Aggregate Industries</td>
<td>Limestone</td>
</tr>
<tr>
<td>Gurney Slade &amp; Binegar</td>
<td>Morris and Perry Ltd</td>
<td>Limestone</td>
</tr>
<tr>
<td>Halecombe</td>
<td>Tarmac Quarry Products</td>
<td>Limestone</td>
</tr>
<tr>
<td>Holwell/Colemans</td>
<td>Aggregate Industries</td>
<td>Limestone</td>
</tr>
<tr>
<td>Moons Hill</td>
<td>John Wainwright and Co</td>
<td>Igneous</td>
</tr>
<tr>
<td>Shipham Hill (inactive)</td>
<td>Aggregate Industries</td>
<td>Limestone</td>
</tr>
<tr>
<td>Torr Works</td>
<td>Aggregate Industries</td>
<td>Limestone</td>
</tr>
<tr>
<td>Whatley</td>
<td>Hanson</td>
<td>Limestone</td>
</tr>
<tr>
<td><strong>Dormant</strong></td>
<td></td>
<td></td>
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<tr>
<td>Chelmscombe</td>
<td>Hanson (part of Battscombe and now an industrial site)</td>
<td>Limestone</td>
</tr>
<tr>
<td>Cloford</td>
<td>Aggregate Industries</td>
<td>Limestone</td>
</tr>
<tr>
<td>Cookswood/Holcombe</td>
<td>Rick Massey</td>
<td>Limestone</td>
</tr>
<tr>
<td>Emborough</td>
<td>RM Penny (waste)</td>
<td>Limestone</td>
</tr>
<tr>
<td>Highcroft</td>
<td>Vernon Hill</td>
<td>Limestone</td>
</tr>
<tr>
<td>Lime Kiln Hill</td>
<td>Western Skip Hire (waste)</td>
<td>Limestone</td>
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<td>Stoke Lane</td>
<td>F Morland</td>
<td>Limestone</td>
</tr>
<tr>
<td>Tadhill</td>
<td>Aggregate Industries/John Wainwright and Co (joint ownership)</td>
<td>Andesite (Igneous)</td>
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<tr>
<td>Tor Hill</td>
<td>Finlay Breton Concrete</td>
<td>Limestone</td>
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<tr>
<td>Westdown</td>
<td>Hanson</td>
<td>Limestone</td>
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3.6. In addition to those listed, there are two dormant sites that were disregarded from the study at the outset: Dulcote Quarry was excluded as planning permission has been granted for industrial units on the site; Westbury Quarry was excluded as the site is currently being used for explosives testing and is likely to continue to do so for the foreseeable future.

3.7. Of the ten dormant sites listed, only two are considered likely to reopen in the foreseeable future\(^{10}\): Westdown and Cloford. Table 3.2 explains why the remaining eight dormant sites are considered unlikely to reopen in the foreseeable future, as documented in the Minerals Local Plan.

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\(^{10}\) Section 6.3 of Somerset Minerals Local Plan (April 2004)
Table 3.2: Dormant sites unlikely to be worked in the foreseeable future

<table>
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<tr>
<th>Quarry</th>
<th>Status</th>
<th>Considerations</th>
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<td>Quayries considered to be in an unacceptable location</td>
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<tr>
<td>Cookswood/ Holcombe</td>
<td>Dormant IDO(^{11}) but an active ROMP(^{12}) permission, a new scheme of conditions would need to be agreed prior to quarrying recommencing. In addition, the site is not permitted to reopen until working at Whatley is substantially complete. It is therefore unlikely that this site will reopen during the plan period.</td>
<td>Traffic, groundwater, nature conservation and landscape/visual impacts.</td>
</tr>
<tr>
<td>Stafford Lane</td>
<td>Classified as an active IDO, a scheme of conditions has been agreed at appeal. The 1997 appeal letter stated that the appellant had no plans to resume quarrying and had no technical expertise in quarrying. The remaining un-worked areas are under a different ownership (attitude to quarrying unknown), but these areas would be needed for deepening of the existing void to be viable.</td>
<td>The existing quarry lies within the St Dunstans Well Catchment SSSI, although the unworked portion lies outside the SSSI.</td>
</tr>
<tr>
<td>Quayries considered to be in an unacceptable location and unlikely to resume working</td>
<td></td>
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</tr>
<tr>
<td>Tadhill</td>
<td>Dormant IDO, no evidence of working since 1966.</td>
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<tr>
<td>Lime Kiln Hill</td>
<td>1948 IDO registered and conditions agreed. Western half of site is now used for landfill and recycling and a condition on the IDO scheme prevents further extraction of stone.</td>
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<tr>
<td>Highcroft</td>
<td>Dormant IDO, not worked since the early 1970s.</td>
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<tr>
<td>Emborough</td>
<td>Dormant IDO, not worked since the early 1960s. Part of the site is now in industrial use. Owner has indicated that the site is not commercially viable.</td>
<td>Site is divided by a disused railway line, the route of which is safeguarded. Emborough Quarries SSSI covers part of the southern half of the site.</td>
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<tr>
<td>Tor Hill</td>
<td>Dormant IDO, not worked since 1952. Industrial units have now been developed within the quarry. Discussions were held in 1998 about working to supply the concrete</td>
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\(^{11}\) IDO or Interim Development Order – the Planning and Compensation Act 1991 introduced a mandatory requirement for minerals planning authorities to review minerals planning permissions and bring them up to modern standards. This applied to minerals sites granted under Interim Development Orders between 21\(^{st}\) July 1943 and 1\(^{st}\) July 1948

\(^{12}\) ROMP or Review of Old Mineral Planning Permissions – the Environment Act 1995 contained provisions which enabled ‘old mineral planning permissions’ to be updated. These were defined as those granted between 1\(^{st}\) July 1948 and 22\(^{nd}\) February 1982
Table 3.3: Sites considered for inclusion as strategic sites

<table>
<thead>
<tr>
<th>Aggregate Quarries</th>
<th>Operator</th>
<th>Mineral</th>
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<tr>
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<tr>
<td>Holwell/Colemans</td>
<td>Aggregate Industries</td>
<td>Limestone</td>
</tr>
<tr>
<td>Moons Hill</td>
<td>John Wainwright and Co</td>
<td>Igneous</td>
</tr>
<tr>
<td>Shipham Hill (inactive)</td>
<td>Aggregate Industries</td>
<td>Limestone</td>
</tr>
<tr>
<td>Torr Works</td>
<td>Aggregate Industries</td>
<td>Limestone</td>
</tr>
<tr>
<td>Whatley</td>
<td>Hanson</td>
<td>Limestone</td>
</tr>
</tbody>
</table>

**STEP 3: ASSESSING THE DEMAND AND OUTPUT RESTRICTIONS**

**Demand**

3.10. An important element of this study is the likely future demand for crushed rock aggregate over the Minerals Core Strategy plan period. However, given that the

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likely future demand for crushed rock is unknown, the study identified three potential proxies for demand that could be used:

- past production;
- the existing sub-regional apportionment; and
- the proposed new sub-regional apportionment for Somerset.

3.11. Paragraph 70 of MPS1: Practice Guide states that landbank calculations can only estimate likely supply within an accuracy of a year or two and, therefore, need not be over-precise. As such, and in order to avoid giving the impression of a level of accuracy that was not possible in the study, the demand figures presented from here on are rounded to the closest million tonne.

**Past Production**

3.12. The rate of past production can be used as a proxy for the likely future demand for crushed rock aggregate. Based on the average annual sales between 2005 and 2007, the rate of past production is 11.83mt per year (rounded to 12mt). Using the extrapolated existing landbank from the 2009 Aggregate Minerals Survey, Somerset will have 302mt of permitted reserves remaining at the start of 2013. At the rate of past production, the existing landbank of 302mt would last approximately 25.5 years. Given that the proposed landbank of the emerging Somerset Minerals Core Strategy is 25 years, based on these past production figures there should be sufficient permitted reserves in Somerset to meet the demand for crushed rock for the entirety of the plan period.

**Extant Sub-regional Apportionment**

3.13. The National and Regional Guidelines for Aggregate Provision in England 2005-2020 published by the Department for Communities and Local Government (DCLG) in June 2009 (referred to from here on as the 2005-2020 Guidelines) indicates that the South West’s future provision for land won crushed rock should be 412mt; a 9% reduction in comparison with figures set for the period 2001-2016. In accordance with MPS 1, the South West Strategic Leader’s Board (the executive arm of South West Councils and the (now defunct) Regional Planning Body for the South West) was required to apportion the region’s figure for primary aggregates provision contained in the guidelines (both sand and gravel and crushed rock) to a sub-regional level.

3.14. Work was being undertaken to achieve this when the government announced that they intend to abolish Regional Spatial Strategies and remove the regional planning tier. The resulting uncertainty this announcement created led to work on the new sub-regional apportionment reflecting the 2005-2020 Guidelines to come to a premature end.

3.15. In the absence of a sub-regional apportionment for crushed rock based on the 2005-2020 Guidelines, the aggregate apportionment for SCC as set out in the July 2008
Draft Revised Regional Spatial Strategy for the South West\textsuperscript{14} can be used as a proxy for demand: \textbf{14.14mt per year} (rounded to 14mt). At this rate of demand, the crushed rock landbank for Somerset of 302mt would be sufficient for approximately 21.5 years. Given that the proposed landbank of the emerging Somerset Minerals Core Strategy is 25 years, under this proxy for demand there are sufficient reserves to cover the plan period of 15 years, but the additional 10 year landbank would not be retained towards the end of the plan period.

**Proposed Sub-regional Apportionment**

3.16. Following cessation of the sub-regional apportionment work, SCC continued discussions with the other MPAs in the South West region via SWRAWP. Through the SWRAWP, SCC has submitted a proposed sub-regional apportionment for Somerset to DCLG of \textbf{13.41mt per year} (rounded to 13mt).

3.17. At the rate of demand indicated by the proposed sub-regional apportionment, the crushed rock landbank for Somerset of 302mt would be sufficient for approximately 23 years. Given that the proposed landbank of the emerging Somerset Minerals Core Strategy is 25 years, under this proxy for demand there are sufficient reserves to cover the plan period of 15 years, but the additional 10 year landbank would not be retained towards the end of the plan period.

**Demand Scenarios**

3.18. In agreement with SCC, it was decided that all three proxies for demand should be considered in the identification of strategic sites, thereby establishing if the level of demand alters the outcomes of the study. As such, past production, the extant sub-regional apportionment and the proposed new sub-regional apportionment were taken forward as Scenarios 1, 2 and 3 respectively:

\textit{Scenario 1: Past Production} – Based on the 25 year landbank proposed for the Minerals Core Strategy plan period 2013 to 2028, with a 10 year landbank, the permitted reserves required for Somerset under the past production scenario are 300mt (or 12mt per annum).

\textit{Scenario 2: Extant Sub-regional Apportionment} – Under the extant sub-regional apportionment scenario of 14mt per annum, and based on the 25 year landbank proposed, the permitted reserves required for Somerset are 350mt.

\textit{Scenario 3: Proposed Apportionment} – The permitted reserves required based on a 25 year landbank under the proposed sub-regional apportionment scenario are 325mt (or 13mt per annum).

**Output Restrictions**

3.19. With the exception of Moons Hill Quarry, each active site in the Mendips has a planning condition that places a limit on the volume of aggregate that can be sold

\textsuperscript{14} Draft Revised Regional Spatial Strategy for the South West incorporating the Secretary of State’s Proposed Changes published for consultation in July 2008
within a defined period. The limit for each site is shown in Table 3.4, together with an indication of the equivalent annual output restrictions.

**Table 3.4: Planning conditions regarding output**

<table>
<thead>
<tr>
<th>Aggregate Quarry</th>
<th>Planning condition</th>
<th>Equivalent Annual Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battscombe</td>
<td>Total sales shall not exceed 6.5 million tonnes over 60 calendar months.</td>
<td>1.3mt</td>
</tr>
<tr>
<td>Callow Rock</td>
<td>Total sales shall not exceed 6.5 million tonnes over 60 calendar months.</td>
<td>1.3mt</td>
</tr>
<tr>
<td>Gurney Slade &amp; Binegar</td>
<td>Annual output is limited to 2 million tonnes.</td>
<td>2mt</td>
</tr>
<tr>
<td>Halecombe</td>
<td>Annual output restrictions not to exceed 900,000 tonnes averaged over 3 years, or 1 million tonnes in one year.</td>
<td>0.9mt</td>
</tr>
<tr>
<td>Holwell/Colemans</td>
<td>The total output of Carboniferous limestone from the complex shall not exceed 2.8m tonnes over any 36 months.</td>
<td>0.95mt</td>
</tr>
<tr>
<td>Moons Hill</td>
<td>Moons Hill has no output restriction in the planning permission due to the material type and smaller quantity of reserve.</td>
<td>n/a</td>
</tr>
<tr>
<td>Shipham Hill (inactive)</td>
<td>Total output shall not exceed 1.25 million tonnes over 60 calendar months.</td>
<td>0.25</td>
</tr>
<tr>
<td>Torr Works</td>
<td>Shall not exceed 6 million tonnes per annum.</td>
<td>6mt of which no more than 3mt is to be transported by road in any one year</td>
</tr>
<tr>
<td>Whatley</td>
<td>Shall not exceed 20 million tonnes over the period of 1.1.98 - 31.12.2000 or 24 million tonnes over any successive 3 calendar years.</td>
<td>8mt of which no more than 4mt is to be transported by road in any one year</td>
</tr>
</tbody>
</table>

| Approximate Annual Output Limit for the Mendips | 20.7mt |

3.20. From the equivalent annual output for each quarry, it is possible to generate an approximate annual output restriction for the Mendips as a whole. Rounding to the nearest half million tonnes, this is **20.5mt**, plus that produced by Moons Hill Quarry, which does not have an output restriction. Of this 20.5mt, the two rail linked sites (Torr Works and Whatley Quarry) account for 14mt, nearly 70% of the permitted output.

3.21. Alongside the available permitted reserves, these output restrictions control the amount of aggregate that each individual site can contribute to the annual demand, be it 12mt under demand Scenario 1, 14mt under Scenario 2 or 13mt under Scenario 3.

**Further Considerations**

3.22. As set out under Step 1, the sites that are to be considered central to meeting the demand for aggregate resources over the plan period will be those that are classified as strategic. However, consideration of the demand for crushed rock aggregates must not only reflect demand as represented by the three scenarios and output restrictions, but also take account of other influencing factors such as:
1. Aggregate uses (and therefore type of aggregate required).

2. Transportation method.

3. Geographical area served (the nature and location of the market).

**Aggregate uses: supplying specialist aggregate types**

3.23. Discussions with quarry operators highlighted the importance of a geologically specialist market supplied from within the Mendips. Moons Hill Quarry is the only site in the Mendips capable of producing high Polished Stone Value (PSV) aggregate suitable for the wearing course of A roads, due to the geology of the site. The nearest alternatives for this type of aggregate are in South Wales. As a result, the quarry supplies this high quality aggregate to a large geographical area, ranging from Devon to East Sussex and occasionally as far north as Nottinghamshire. Aggregate from Moons Hill can also be blended with imported materials to improve the overall PSV for other high specification needs, which reduces the overall import requirement for the county.

3.24. Reducing transport distances travelled by aggregate has a positive impact on a number of sustainability considerations: use of finite resources, air quality, climate change, noise pollution etc. Given the significance of the high PSV aggregate supplied by Moons Hill Quarry to reducing the transport distances, the supply of aggregate from Moons Hill Quarry was given significant weight in this study.

**Transportation method: supplying markets outside the South West**

3.25. One of the national policies for minerals planning set out in MPS1 requires MPAs to “seek to promote and enable the bulk movement of minerals by rail, sea or inland waterways to reduce the environmental impact of their transportation”.

3.26. There are very few quarries able to supply aggregate by rail in the South West; two of those that can are located in the Mendips. Torr Works and Whatley Quarry jointly exported 5.8mt of aggregate by rail in 2007, 5.5mt of which were to outside the South West region, predominately to London and the South East. With total average annual sales for Somerset of approximately 12mt, the aggregate transported to outside the South West region accounts for just under half the total aggregate produced.

3.27. The rail supplied crushed rock aggregate from the Mendips is of strategic importance to London and the South East. As such, SCC considered the provision of separate landbanks for rail supplied aggregate and road supplied aggregate. However, there is no indication in national policy that the required landbank for a minerals planning authority can be split in this way, a view confirmed by South West Councils. As a result, it was judged that a single landbank figure should be used, regardless of transportation method. However, given the strategic importance of transportation of aggregate from the Mendips by rail, this transportation method was given significant weight in this study.

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**Geographical area served**

3.28. Aggregate transported by rail from the Mendips supplies predominantly the South West, London and the South East. In order to inform consideration of the geographic area served via road transport, the operator of each active quarry was asked what the aggregate from each site is used for and where the main markets are. The information gathered has been included in **Confidential Appendix 3**, as it contains commercially sensitive information.

3.29. With the exception of Moons Hill (for the reasons highlighted above), quarries in the Mendips supply general construction aggregate, road stone (for road building and maintenance, except aggregate for the wearing course) and concrete block work. To aid the understanding of uses described in **Confidential Appendix 3**, an explanation of the various layers required in an average road construction is provided in Figure 3.3.

**Figure 3.3: Layers required within an average road**

<table>
<thead>
<tr>
<th>Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wearing course (bound): high PSV aggregate</td>
</tr>
<tr>
<td>Base course (bound)</td>
</tr>
<tr>
<td>Road base</td>
</tr>
<tr>
<td>Sub-base (Type 1 aggregate, unbound)</td>
</tr>
<tr>
<td>Capping layer</td>
</tr>
<tr>
<td>Sub-grade</td>
</tr>
</tbody>
</table>

3.30. Analysis of the information received from operators indicated that the majority of sites serve different areas. This is unsurprising given the market-led and competitive nature of the industry. However, that is not to say that should a quarry cease to supply a certain area, the needs of that area could not be met by an alternative site. As such, an assumption was made concerning the distance aggregates can be transported based on economics.

3.31. A figure often quoted is that, due to the costs involved, road transport of aggregates is realistically not competitive beyond 30 miles from the aggregate source, except in the case of specialist products such as high PSV gritstone.\(^{16}\) This distance was therefore adopted for use in this study, to provide an indication of the ability of more than one quarry to serve an identified market. The extent of a 30 mile buffer around the sites considered in this study is shown in **Figure 3.2**, which also indicates that the site buffers overlap considerably, with the buffers of 2 or more sites covering the majority of Somerset.

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\(^{16}\) [British Geological Survey: Planning 4 Minerals](http://www.bgs.ac.uk/planning4minerals/Economics_8.htm)
3.32. Discussions with quarry operators highlighted instances where this ‘maximum’ distance is exceeded due to specific contracts held by certain sites or value added products offered. However, for the purpose of this study it has been assumed that, through investment in additional equipment, these markets could be supplied by other sites if necessary, as in geological terms other sites would be capable of meeting these demands using spare capacity (indicated by the difference between recent production rates and permitted outputs).

3.33. To summarise, as a result of analysis of the information provided by operators, this study has assumed that general construction aggregate, road stone and concrete block markets currently supplied by one site via road transport, could feasibly be supplied by a different site if required. As such, no further consideration was given to the geographical area served by road transported aggregate within Somerset.

Aggregate Landbank

3.34. As set out in Section 2, information provided by the minerals operators on the remaining permitted reserves for the four-yearly Aggregate Minerals Survey revealed that Somerset had permitted reserves of 337.1mt at the end of 2009. Assuming average annual sales of 11.83mt in 2010, 2011 and 2012, and that no additional reserves have been or will be granted planning permission in this period, the permitted reserves (or existing landbank) in Somerset at the start of 2013 can be estimated at 302mt.

3.35. Based on these figures, there are sufficient permitted reserves under each of the three demand scenarios – Scenario 1: Past production, Scenario 2: Extant Sub-regional Apportionment, and Scenario 3: Proposed Apportionment – for the landbank required for the 15 year Minerals Core Strategy plan period of 2013 to 2028 to be met.

3.36. However, only under Scenario 1: Past Production would the additional 10 year landbank be retained towards the end of the plan period. As the permitted reserve figures currently stand, a 6.5 year landbank would remain at the end of 2028 under Scenario 2, and an 8 year landbank would remain at the end of 2028 under Scenario 3.

3.37. In the context of the potential shortfalls in permitted reserves under Scenarios 2 and 3 a number of factors need to be considered:

- MPS1 states that “if review and updating takes place regularly then maintaining a landbank beyond the end if the plan period is not an issue.” SCC will consider and report on the need to review the policies in the Minerals Core Strategy on an annual basis through the annual monitoring report.

- The Minerals Core Strategy will be reviewed during the plan period and so the potential shortfall in supply under Scenarios 2 and 3 can be revisited at this time with the benefit of more up-to-date information on remaining reserves and future demand. If it becomes apparent that annual production is above the apportionment level, a review of the crushed rock provision could be brought forward.
• Somerset’s crushed rock output has been less than the historic sub-regional apportionment figures for Somerset and less than 13.41 million tonnes per annum for at least the last 15 years, apart from 2001 when it was almost 14 million tonnes. As such, a proxy for future demand based on a sub-regional apportionment is likely to be an over estimate of the landbank required.

• The dormant sites of Cloford and Westdown are considered by the industry to contain viable reserves that may be worked once Torr Works and Whatley Quarry are completed. The sites contain the same type of resource and are owned by the same operators. As these sites are dormant, working could recommence once a full working and reclamation scheme has been submitted and agreed by SCC.

• The minerals industry can submit a planning application for an extension to an existing site or new site at any point during the plan period which, if granted, would add to the landbank of permitted reserves.

• Under the extant managed aggregates supply system (noting that this may change as a result of the current review by DCLG) the sub-regional apportionment for Somerset may be reduced through future reviews by the National and Regional Guidelines for Aggregates Provision, as has been done in the past.

3.38. Taking these considerations into account, it was decided by SCC that even under Scenarios 2 and 3, there is insufficient evidence that additional aggregate reserves need to be identified within the Minerals Development Framework.

STEP 4: IDENTIFICATION OF STRATEGIC SITES

High PSV Aggregate

3.39. Moons Hill Quarry is the only existing site in Somerset that can produce high PSV aggregate suitable for the wearing course of A roads. This is a direct result of the geology of the site. Moons Hill is critical to the supply of high PSV aggregate to the county and beyond, providing aggregate directly for road building and maintenance, whilst also supplying other quarries in the area to improve the PSV of their products.

3.40. The demand for high PSV aggregate in Somerset (and beyond) would not be able to be met from within Somerset without Moons Hill Quarry. As such, this site is considered to be of strategic importance to the county under all three Scenarios.

General Construction Aggregate

3.41. Using information on the output limits at each site (Table 3.4), an assessment of whether the needs of the Minerals Core Strategy could be met without each individual site was undertaken to identify potential strategic sites. The assessment took into account that the maximum permitted output for two sites, Torr Works and Whatley Quarry, is limited by transportation method, and in so doing considered the strategic importance of rail supplied aggregate from the Mendips to London and the South East.
3.42. The planning permissions for Torr Works and Whatley Quarry impose a limit on the amount of aggregate that can be transported by road – 3mt and 4mt respectively. Table 3.5 contains the equivalent annual permitted output by transportation type.

**Table 3.5: Planning conditions regarding output**

<table>
<thead>
<tr>
<th>Aggregate Quarry</th>
<th>Equivalent Annual Output by Road</th>
<th>Equivalent Annual Output by Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battsccombe</td>
<td>1.3mt</td>
<td>n/a</td>
</tr>
<tr>
<td>Callow Rock</td>
<td>1.3mt</td>
<td>n/a</td>
</tr>
<tr>
<td>Gurney Slade &amp; Binegar</td>
<td>2mt</td>
<td>n/a</td>
</tr>
<tr>
<td>Halecombe</td>
<td>0.9mt</td>
<td>n/a</td>
</tr>
<tr>
<td>Holwell/ Colemans</td>
<td>0.95mt</td>
<td>n/a</td>
</tr>
<tr>
<td>Moons Hill</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Shipham Hill (inactive)</td>
<td>0.25</td>
<td>n/a</td>
</tr>
<tr>
<td>Torr Works *</td>
<td>3mt</td>
<td>6mt</td>
</tr>
<tr>
<td>Whatley *</td>
<td>4mt</td>
<td>8mt</td>
</tr>
<tr>
<td><strong>Approximate Annual Output Limit for the Mendips</strong></td>
<td><strong>13.7mt</strong></td>
<td><strong>14mt</strong></td>
</tr>
</tbody>
</table>

* Note: The total maximum output for Torr Works and Whatley Quarry is 6mt and 8mt per annum; therefore if Torr Works transports 6mt by rail and Whatley Quarry 8mt by rail, no aggregate can be transported by road from either site. Similarly, if the maximum tonnage of aggregate possible is transported by road from each site, rail transported aggregate would then be limited to 3mt in the case of Torr Works and 4mt for Whatley Quarry.

3.43. Data from the 2007 SWRAWP Annual Report (2009) shows that Torr Works and Whatley Quarry jointly exported 5.8mt of aggregate by rail in 2007. Assuming this to be a fair indication of the annual tonnage of aggregate exported from these sites by rail, it is possible to work out the proportion of the demand under each of the three demand scenarios that would be likely to be met through transportation by road:

- **Scenario 1: Past Production** – 12mt per annum minus 5.8mt transported by rail, leaves 6.2mt of aggregate required under this demand scenario to be transported by road.

- **Scenario 2: Extant Sub-regional Apportionment** – 14mt per annum minus 5.8mt transported by rail, leaves 8.2mt of aggregate required under this demand scenario to be transported by road.

- **Scenario 3: Proposed Apportionment** – 13mt per annum minus 5.8mt transported by rail, leaves 7.2mt of aggregate required under this demand scenario to be transported by road.

3.44. The joint permitted output by rail from Torr Works and Whatley Quarry is 14mt. With an annual export of 5.8mt by rail, this leaves 8.2mt of their permitted annual output. However, as the planning permissions for these two sites limit their joint output by road to 7mt, this is the maximum amount of the aggregate they can export from the site by this transportation method.

3.45. With a maximum annual permitted output for road transported aggregate from the Mendips as a whole of 13.7mt, the annual requirement under Scenarios 1, 2 and 3 that would be likely to be transported by road (i.e. net of the 5.8mt of rail transported aggregate) would be 6.2mt, 8.2mt and 7.2mt respectively, all of which are well within the output limits.
Permitted Output by Road

3.46. Using the information on permitted outputs by road contained in Table 3.5, there is no single quarry in the Mendips that, if its output ceased, would prevent the demand for aggregate (as approximated by the three demand scenarios) to be met. Therefore, no strategic sites have been identified based on the need for road transported aggregate.

Permitted Output by Rail

3.47. With a combined maximum permitted output for rail transported aggregate of 14mt from Torr Works and Whatley Quarry, the assumed annual requirement for rail transported aggregate of 5.8mt can easily be met within the combined output limits for the two sites. Based on the strategic importance of rail supplied aggregate from the Mendips, the limited number of sites able to supply this demand and the sustainability benefits of transporting aggregates long distances by rail rather than road, both Torr Works and Whatley Quarry are considered to be strategic sites for rail transported aggregate.

3.48. Consideration was given to the fact that either of these two sites could individually meet the annual requirement for rail transported aggregate. However, in consultation with SCC, the lack of flexibility that would result should either Torr Works or Whatley Quarry cease output was considered to put at risk Somerset’s ability to maintain an adequate and steady supply of minerals for the economy and society, as required by MPS1.

Identified Strategic Sites

3.49. As a result of the considerations and judgements made above, three active sites in the Mendips have been identified as strategic sites under all three demand scenarios:

- Moons Hill Quarry for its importance in the supply of high PSV aggregate; and
- Torr Works and Whatley Quarry for their importance in supplying rail transported aggregate.

STEP 5: SUSTAINABILITY ASSESSMENT

3.50. The demand for crushed rock aggregate should be met in accordance with the shared UK principles of sustainable development as illustrated in Figure 3.3. In order to inform the development of the Minerals Development Framework as a whole, it was agreed with SCC that the sites that make up the existing landbank of 302mt and the two dormant sites of Westdown and Cloford should be assessed in terms of their sustainability, which will be used to inform the development of the Minerals Development Framework as a whole.
3.51. In order to compare the quarries on sustainability grounds, a set of sustainability criteria were developed. The draft Minerals Sustainability Appraisal Framework for SCC Minerals and Waste Development Framework was used as the foundation for the development of sustainability criteria, with amendments made where necessary to reflect the nature of this strategic sites assessment and its focus on crushed rock aggregate. Table 3.6 sets out the sustainability criteria presented in a series of questions.

3.52. To inform the sustainability assessment, a proforma detailing known information about each site, with an associated information map was produced (the site proformas are included in Confidential Appendix 1). Questions put to mineral operators when researching each site are provided in Appendix 2. The resulting detailed assessment of each site are contained in Confidential Appendix 4, with any key issues identified discussed further below. Appendix 4 must remain confidential as it draws on commercially sensitive information.
<table>
<thead>
<tr>
<th>Minerals and Waste Development Framework SA Framework</th>
<th>Sustainability criteria</th>
</tr>
</thead>
</table>
| **1. To protect geodiversity and conserve and enhance biodiversity including natural habitats and protected species** | • Is the site within or within 2500m of an international or national nature conservation or geological designation?  
• Is the site within or adjacent to a regional or local nature conservation or geological designation?  
• Will the site maintain and enhance BAP habitats and species? Are there opportunities for the creation of BAP habitats through restoration?  
• Will the site conserve and enhance the best sites that present the geological history of Somerset and/or create new geological exposures of education interest? |
| **2. Protect and enhance landscape character, local distinctiveness and historic built heritage** | • Is the site within a landscape designation?  
• Is the site within or within the setting of a cultural heritage designation? |
| **3. To maintain and improve ground and surface water quality** | • Is the site within a groundwater source protection zone?  
• Is the site adjacent to a surface watercourse? Is the site likely to affect surface water quality?  
• Will the site disrupt hydrological systems in the area? |
| **4. Maintain and improve air quality** | • Is the site within an Air Quality Management Area (AQMA)? |
| **5. Address the causes of climate change through reducing greenhouse gas emissions** | • Is the site located near to areas of demand, thereby reducing the distance travelled by road?  
• Is the site able to transport minerals by rail or water?  
• Is there potential for rail or water-based transport to be used in the future? |
| **6. Limit vulnerability to flooding taking account of climate change** | • Is the site within an area liable to flooding (e.g. Flood Zones 2 or 3)?  
• Will the site increase the risk of flooding in this or other areas?  
• Will the site aid flood management? |
| **7. To minimise the risks to human health derived from mineral extraction and improve overall quality of life/amenity** | • Is the site adjacent or in close proximity to residential properties (sensitive receptors)?  
• Will the site affect transport infrastructure (roads, footpaths, bridleways and cycle ways) or open access land and/or Public Rights of Way? |
| **8. Minimise consumption of natural resources, promote resource efficiency and avoid unnecessary sterilisation** | • Are scalpings reprocessed to produce additional saleable material?  
• Does the site make use of recycled or secondary materials in the production of its saleable products?  
• What percentage of the rock extracted at the site is tipped as...
### Key Sustainability Issues Identified

3.53. In order to complete the sustainability assessment for each site, the following data sources were used:

- Site proformas included in Confidential Appendix 1, together with the associated meetings held with site operators.

- Various datasets provided in Geographical Information System (GIS) format by SCC, the Environment Agency and Natural England.


number of these potential impacts are mitigated through site management and environmental protection legislation. Three issues of particular importance to the Mendips have been highlighted here, but others will need to be considered during the full sustainability appraisal of the Minerals Core Strategy.

**Dewatering**

3.55. One of the most significant sustainability issues identified with regard to quarrying in the Mendips is dewatering, and the potential impacts this has on the hydrology of the area. The South West Region of the Environment Agency (EA) commissioned Entec to update and consolidate current understanding of the hydrology of the Mendips and Broadfield Down. The resulting report has been used to inform this study: the Mendips Groundwater Conceptualisation Project (August 2010). One of the specific objectives of the project was to update the EA’s understanding of the impact of quarry operations on groundwater resources and stream flows.

3.56. The EA report states that “quarrying will result in a loss in unsaturated storage which may affect groundwater resources and modify stream flows. Dewatering to allow working below the water table has the potential to impact abstractions, spring flows and the aquatic environment unless appropriate mitigation measures are implemented (e.g. stream augmentation). Once quarrying ceases, then the quarry void will flood and groundwater levels and river/spring flows recover. However, there can be uncertainty on these final levels and flows and whether these will result in an improvement or detriment to the environment.”

3.57. The report goes on to state that backfilling disused quarries may affect water resources and water quality, depending on the nature of the material used. For example, pollution of the Cold Bath springs has been attributed to an infilled quarry. The main concerns of the EA report, which are relevant to this strategic sites assessment, relate to the impacts of quarrying in the East Mendips.

3.58. With regards to the sustainability assessment of quarries in the Mendips, those located in the East Mendips that are extracting below the water table are most likely to affect hydrological systems in the area. The EA report notes that some springs within the East Mendips have dried up due to quarrying, leading to the need for spring augmentation.

3.59. As demonstrated by the detail of the EA report, the study of hydrological systems in the East Mendips is a complex and specialist subject. Dewatering by quarries has the potential to lead to significant sustainability impacts, which should be taken into account during the development of the Minerals Development Framework through consultation with the EA.

**Restoration**

3.60. An important sustainability impact of quarrying is the potential benefits sites can provide through restoration. All sites within the sustainability assessment have the potential to incorporate additional public access and educational resources, the latter through interpretation material and the retention of some rock faces for geological study.
3.61. There is also considerable potential for restoration of quarries for nature conservation, including the creation of local BAP target habitats. Sites can also be used to encourage outdoor education, through both informal recreation such as walking, but also through organised activities such as rock climbing and abseiling.

**Transportation Method**

3.62. The method for transporting aggregate from quarry to the area of demand is an important sustainability consideration. Where aggregate is transported long-distances, transportation by road is increasingly unsustainable, with transportation by rail or water a more sustainable alternative. The Mendips are a strategically important source of aggregate, supplying not only the South West, but also London and the South East.

3.63. There are two sites in the Mendips that currently supply London and the South East: Torr Works and Whatley Quarry. Both supply these markets by transporting aggregate by rail from rail heads located within their site boundaries, the most sustainable method of transport currently available in the Mendips.
4. CONCLUSIONS

4.1. Consideration of the future demand for aggregate led to the development of three scenarios:

**Scenario 1: Past Production** – based on an average rate of production of 12mt per annum over the plan period 2013 to 2028 (with provision for a ten year landbank), the permitted reserves required for Somerset under the past production scenario are 300mt.

**Scenario 2: Extant Sub-regional Apportionment** – based on the current sub-regional apportionment of aggregate for Somerset contained in the July 2008 Draft Revised Regional Spatial Strategy for the South West (14mt per annum over the plan period, with provision for a ten year landbank), the permitted reserves required for Somerset are 350mt.

**Scenario 3: Proposed Sub-regional Apportionment** – based on the new, proposed sub-regional apportionment of aggregate for Somerset of 13mt per annum, the permitted reserves required for Somerset are 325mt.

4.2. The only site in the Mendips capable of producing high PSV aggregate is Moons Hill Quarry, 3km north east of Shepton Mallet in the East Mendips. The Minerals Core Strategy would not be able to meet the demand for high PSV aggregate without this site therefore it has been identified as a strategic site for Somerset under all three scenarios.

4.3. Based on the strategic importance of rail supplied aggregate from the Mendips, the limited number of sites able to supply this demand and the sustainability benefits of transporting aggregates long distances by rail rather than road, both Torr Works and Whatley Quarry are considered to be strategic sites for rail transported aggregate all three scenarios.

4.4. Three key issues that should be taken into account during the Minerals Core Strategy development process were identified through the sustainability assessment: the impact of quarry dewatering on hydrological systems, particularly in the East Mendips; the potential benefits that can be realised through site restoration, through incorporation of the benefits into site restoration plans; and, the preference for long distance transportation of aggregate by rail.
Figure 3.1: Mendip quarries

Key:

- Yellow
- Green
- Red
- Blue
- Purple
- Pink
- Brown
- Grey
- Black
- White

Somerset Strategic Sites Assessment
Figure 3.2: 30 mile radius around Mendip quarry sites

Key

[Diagram with map showing the 30 mile radius around Mendip quarry sites]
CONFIDENTIAL APPENDIX 1: SITE PROFORMAS
(See Confidential Annex)
APPENDIX 2

QUESTIONS FOR OPERATORS
APPENDIX 2: QUESTIONS FOR OPERATORS

1. Background to the Quarry
   • How long has the quarry been worked?
   • What is the planning history of the quarry? I.e. How many planning permissions have there been; what do they cover?

2. Lifespan/extent of reserves/permissions
   • What is the permitted output of the quarry (tonnage per annum)?
   • What are the current permitted reserves (tonnes)? Will the recent HSE requirements affect the reserves?
   • What is the geological potential of the reserve and can you give an estimate of lifespan based on tonnage (permitted or current)?
   • Has the intensity of extraction decreased/stabilised/increased over the last five years?
   • Are there any limitations/issues on current extraction levels/rates i.e. deepening/positioning of plant material/additional licenses required etc?
   • Have you any planned proposals for additional facilities – storage, handling, processing, scalping washing plant etc?
   • As part of the existing planning permission what reclamation/restoration proposals are proposed? Do you anticipate altering them and if so why?
   • Have you submitted/or are you intending to submit any further planning applications?
   • Are you intending to submit an application outside areas existing workings?
   • Is there an opportunity for additional capacity to accommodate major projects such as the Severn tidal power scheme or Hinkley C (two reactors)? Hinkley to start construction 2011/2012 and finished and generating by 2017/2018. Tidal scheme options including details about aggregate supply to be consulted on 16 Nov – 4 Jan. Jetty construction for import by boat currently preferred but will also consult on road supply ops/ rail to Bridgwater. Will start to stockpile ASAP assuming appropriate planning permission next yr.

3. Environment/Socio/Economic
   • What is the total number of employees on site (ft/pt)?
   • Total number of indirect employees eg. hauliers?
• What environmental protection measures have you put in place?

• Where are your main suppliers/contractors you supply to and markets both geographically and covering type of use?

• Roughly what percentage of material per annum is transported by lorry/rail?

• Have you introduced other processes on site i.e. recycling of construction and demolition waste and/or processing of secondary aggregates?

• Do you backload material –resulting in infilling in certain locations?

4. Additional Sites

• Do you own any sites where you are willing to revoke the planning permissions?

• Do you have any dormant sites you are intending to reactivate? If so, in what timeframe (5 years, 10 years, 20+ years)?

5. Additional Reserves

• Are there any other viable reserves within the Mendips?

• If so, what is the geological potential of the reserve and can you give an estimate of lifespan (based on permitted/current tonnage of a similar active site)?

6. Other issues to cover

• As a result of new Health and Safety measures are you considering lateral excavation rather than deepening?

• What will be the effect of EA licensing on the quarry (i.e. de-watering will soon not be exempt from abstraction licensing)?
CONFIDENTIAL APPENDIX 3

AGGREGATE USE AND MARKET PER ACTIVE QUARRY

(See Confidential Annex)
CONFIDENTIAL APPENDIX 4
SITE SUSTAINABILITY ASSESSMENT

(See Confidential Annex)