

**Buckinghamshire County
Council**

**Minerals Development
Framework**

**Assessment of Potential
Mineral Sites**

**Site 10
George Green**

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ABBREVIATIONS USED IN THIS REPORT

ALC	Agricultural Land Classification
AQMA	Air Quality Management Area
BCC	Buckinghamshire County Council
BMV	Best and Most Versatile (used of farmland - see paragraph 8.1.2)
CAS	Reference number to archaeological sites in the county's Sites and Monuments Record
CBI	Confederation of British Industry
Defra	Department for the Environment, Farming and Rural Affairs. The successor to MAFF (Ministry of Agriculture, Fisheries and Food)
GIS	Geographical Information System (a computer-based system for holding geographical information)
LCZ	Landscape Character Zone
MDD	Minerals Development Document
MLP	Minerals Local Plan (forerunner of the MWLP)
MPS	Minerals Planning Statement (statement of government policy)
MWLP	Minerals and Waste Local Plan (adopted by BCC in 2006)
PPG/PPS	Planning Policy Guidance Note/Planning Policy Statement (statements of government policy)
SA	Sustainability Appraisal
SHN	Strategic Highway Network (the principal roads of Buckinghamshire)
SPG7	Supplementary Planning Guidance Note 7 to the MWLP, setting out indicative buffer distances for minerals and waste development
SPZ	Source Protection Zone (see paragraph 7.1.2)

1 INTRODUCTION

- 1.1 In March 2006, Buckinghamshire County Council commissioned Jacobs (formerly Jacobs Babbie) to undertake an assessment of nine potential mineral extraction sites in the county against a defined set of sustainability objectives, and in the light of this assessment to rank the sites in order of their suitability for inclusion as areas for future extraction (if required) in future Minerals Development Plan Documents.
- 1.2 The original nine sites were sites that had been suggested at previous Minerals (or Minerals and Waste) Local Plan Inquiries as having potential for future extraction, but which had been rejected for one reason or another in the context of the contemporary need for further sites. In particular, they comprised sites that had been suggested by mineral operators for inclusion in the Minerals and Waste Local Plan (MWLP) that was eventually adopted in 2006, but which the County Council had declined to consider in that context because it was satisfied that, at the time when that Plan was being prepared, sufficient sites had already been identified to meet the needs for the MWLP plan period.
- 1.3 Subsequently a tenth site was added, at George Green, in response to a request from another operator that the site be considered for inclusion in future MDDs.
- 1.4 The original intention to assess the sites against a list of 13 sustainability objectives provided by the County Council was later replaced by a decision to assess the sites against the 23 sustainability appraisal objectives that were included in the Scoping Report for the Minerals and Waste Development Framework, published in June 2006. Because these objectives were devised to apply to potential waste development documents as well as to minerals development documents, not all of these 23 objectives were necessarily directly applicable in the present exercise.
- 1.5 The outputs of this project are as follows:
- (i) A set of reports, one for each site, describing the factual position at each site in terms of the issues raised by the SA objectives (the present report is one of this set); and
 - (ii) A separate report setting out the results of the comparative analysis of the ten sites in terms of these objectives, with a ranking list of the sites' relative suitability for mineral extraction.

Methodology of the site assessments

- 1.6 Once the list of SA objectives had been finalised, a set of issues deriving from each objective, which might be relevant to assessment of the sites' suitability for mineral working, was drawn up by Jacobs and discussed and agreed with officers of the County Council. These issues then formed the basis of the assembly of information about each site, using a wide range of sources including

- GIS data supplied by the County Council
- Planning history records supplied by the County Council, including in particular the Council's submissions to the MLP inquiry in 1991 at which many of these sites were considered in detail
- Other records relating to minerals planning in Buckinghamshire already held by Jacobs (notably the Inspector's Report of the 1991 inquiry)
- On-line sources, such as the website of the Environment Agency and www.magic.gov.uk
- The adopted South Bucks District Local Plan, and other information (notably about air quality) taken from the District Council's website
- Operators' submissions to the Council in association with the preparation of the Minerals and Waste Local Plan (adopted 2006)
- Visits to each site to resolve any queries that had arisen from the other data.

1.7 The above process describes the approach adopted for all topics except landscape and visual issues, and ecological issues. Assessment of the ten sites in terms of these two topics was undertaken principally by means of visits to the sites and the areas around them. Where possible, Phase 1 Habitat Assessments were undertaken to record biodiversity interests at each site (in some cases, it was not possible to gain access to the sites and so no such detailed surveys could be undertaken). The results of these on-site investigations were supplemented by consideration of additional information supplied by the County Council (such as GIS-based data).

1.8 It was agreed at the outset of the project that no formal contact would be made with outside bodies (such as the Environment Agency, nor with the Highway Authority, to seek their formal views on the ten potential sites. In practice, however, a single informal meeting was held with a representative of the Highway Authority to consider access issues affecting the ten sites, and the outcome of that meeting has been incorporated in the present report.

1.9 The link between the 23 SA objectives and the chapter-structure of the present report is set out in the following table.

SA objective	Topic (summarised)	Addressed in Chapter ... of this report
SA1	Air quality	3
SA2	Climate change	11
SA3	Living conditions and residential amenity	3
SA4	Health	3
SA5	Biodiversity	5
SA6	Historic Environment	6
SA7	Soils	8
SA8	Landscape and townscape	4
SA9	Material assets	10
SA10	Water quality and resources	7
SA11	Flood risk	7
SA12	Mineral resources	10

SA13	Restoration and after-use	See 1.13 below
SA14	Sustainable management of waste	11
SA15	Energy use and generation	11
SA16	Traffic impacts	3, 9
SA17	Use of transport modes other than road	9
SA18	Meeting the need for minerals	12
SA19	Community participation	12
SA20	Recreation resources	12
SA21	Use of sound science	12
SA22	Impacts on employment uses	12
SA23	Economic growth and investment	12

Limitations and assumptions

- 1.10 The assessment has been based on the best information available to Jacobs at the time of this project. No independent verification has been made of any of the documents or information supplied to, or available to, Jacobs for use in this project.
- 1.11 All ten of the potential sites are located in the Metropolitan Green Belt, and this has therefore been disregarded as a consideration in the site-specific and the comparative assessment of the sites. In any case, in accordance with PPG2 mineral extraction is not precluded in the Green Belt, and so this is not a consideration that would have carried any significant weight as a matter of broad principle.
- 1.12 Only limited account has been taken in the site-specific assessments and the comparative analysis of the prospective mineral operators' stated intentions for the sites in terms of their methods of working and, in particular, of their suggested restoration proposals for each site. In cases where operators propose to work one of the proposed sites in sequence with an existing site, using the same plant and perhaps the same access, this has been noted; but the assessment has not been limited to this if other possible ways of working the site suggest themselves, or if some practical or other difficulties have been identified in working the site in the way in which the operator proposes.
- 1.13 Specifically on restoration, although comments have been made in the sections on landscape (Chapter 4) and on sustainable waste management (in Chapter 11) that touch on the possible form of restoration of each site, these assessments do not make fixed assumptions about the way in which each site might, or might best, be restored.
- 1.14 The opinions and conclusions contained in this report represent the views of the Council's consultants, but should not be regarded as necessarily representing the views of the County Council when they come to consider the sites either as potential Preferred Areas in the preparation of future Minerals and Waste Development Documents, or when considering individual planning applications for mineral extraction or similar development.
- 1.15 All judgements and conclusions on particular issues as expressed in this report are subject to testing and verification (or otherwise) through the process of Environmental Impact Assessment at the time of submission of a planning application for mineral extraction.

2 SITE DESCRIPTION

Location

- 2.1 Site 10 (George Green) is located close to the Buckinghamshire and Berkshire border south of the South Bucks District. It is situated south west of the settlement of George Green and adjacent to the A412 (Uxbridge Road), which passes west of the site. Upton Lea, a suburb of Slough, is located the other side of this main road opposite Site 10. Approximately 600m to the south of the site lies the Grand Union Canal and a little further south is the Paddington mainline railway.
- 2.2 The site is very close to residential areas within the town of Slough, namely Upton Lea to the west and Langley to the south east. In addition, the small settlement of George Green is approximately 200m from the site to the north.
- 2.3 The site has one road frontage, which is the A412 (Uxbridge Road). This links to the A4 in the south and the M40 to the north (at a distance of about 5km). The M4 is approximately 2.5km south of the site and the M25 is 4.5km east. There are unclassified roads nearby to the north at George Green and east at Middle Green.
- 2.4 There is currently no mineral extraction close to Site 10.
- 2.5 Sites 4, 5, 8 and in the present assessment lie approximately 2.5km north, 800m east, and 2km north-east of Site 10 respectively.

Use and character

- 2.6 The site is broadly flat land, currently in use as arable land (wheat crop). Boundary of the field is mainly hedgerow and there is also a line of mature trees along the southern border. South of the site is a commercial nursery and approximately 1.5km north is Langley Park Country Park. A public right of way passes along the eastern site boundary (For further details, see Chapter 4 and 12 of this report).

Area and potential mineral yield

- 2.7 Site 10 has a gross area of 25.3ha (as measured from GIS maps). No information is available regarding the net workable area or the estimated yield.

Planning history and Operator's proposals

- 2.8 For Site 10, there is belief that there was a planning application in the 1960s, however it was dismissed on appeal. There is no other traceable planning history and no information regarding a prospective operator's proposals for the site.

3 POPULATION AND HEALTH

3.1 Introduction

- 3.1.1 One of the most frequent concerns expressed about mineral extraction is the effect that it, and its associated traffic, can have on the people living close to the extraction site. The impacts - real or claimed - may result from noise, from air pollution (with possible related impacts on health), from the visual effect of the mineral working (and perhaps from the measures taken to screen the working), from the loss of valued amenity features, or from the perceived overall loss of character of an area as a result of its use for mineral extraction. Although mineral extraction is a temporary activity, it and associated site restoration can continue for many years on larger sites, and the change to the landscape which the extraction causes will be permanent.
- 3.1.2 This Chapter considers in particular issues relating to the proximity of the site to residential properties and other 'sensitive receptors' (such as houses, community buildings, and so on), and issues relating to air quality. Issues relating to noise are subsumed within the former topic. Other potential impacts of mineral extraction which, while they may have an effect on people's living conditions and quality of life, also have the potential to impact on more specific 'interests of acknowledged importance' (such as landscape, and the natural and cultural heritage) are considered in separate Chapters.

Proximity and buffer zones

- 3.1.3 The scale of the potential impacts of extraction on living conditions can best be judged by reference to the number of sensitive receptors that lie close to the proposed extraction site, and to the likely routes taken by heavy traffic travelling to and from the site.
- 3.1.4 Policy 29 of the Buckinghamshire Minerals and Waste Local Plan (2006) requires an adequate buffer zone to be provided between the proposed development and neighbouring sensitive uses, in order to protect those uses from the adverse effects of mineral development. In Supplementary Planning Guidance Note 7 (SPG7) to the Local Plan, the County Council indicates that a minimum distance of 200 metres is usually required as a buffer between mineral extraction and sensitive receptors. This distance may be reduced to 100 metres if the extraction site is separated from the receptors by a major road or a deep tree belt. It is stressed in both the Local Plan and in SPG7 that these distances are indicative only, but they provide a helpful guide in the assessment of individual sites at the present stage. The distances from SPG7 are therefore used as the basis of the analysis in the present section.
- 3.1.5 The numbers of dwellings within the 100m and 200m distances as set out in the following sections are approximations based on interpretation of large-scale Ordnance Survey plans of the site. Although the 100m figure is of no direct significance in terms of the indicative buffer zones in SPG7, it is of assistance in the present exercise in indicating the number of properties that are closest to the potential extraction site, and where therefore the impacts of extraction might, in theory at least, be expected to be experienced most strongly.

3.2 Relationship to properties and other sensitive receptors

Houses and other receptors close to the site

- 3.2.1 Site 10 is situated south west of George Green and east of Upton Lea, a suburb of Slough. The western boundary of the site adjoins the Uxbridge Road and the Grand Union Canal is located in the south (MAP REF). Approximately 350 residential properties lie within 200m of the site, mostly west and south west of the site in Upton Lea. (see Map 0004544/BF/10)
- 3.2.2 About 110 of these properties lie within 100m of the site boundary. These are located in George Green and Upton Lea. The A412 (Uxbridge Road) separates some properties from the site in Upton Lea, however some properties are adjacent to the site boundary in the south and the north (see Map 0004544/BF/10). The A412 is a wide dual carriageway at this point, and may be regarded as a 'major road' for the purposes of the indicative buffer zones in SPG7. The number of properties within 200m of the site and on the same side of the A412 is about 220, of which around 65 are within 100m of the site.
- 3.2.3 Two properties located in the 100m buffer zone north of the site are designated as listed buildings. A further two properties are listed and these are located in the 200m buffer zone also north of the site boundary. There is a parish hall north east of the site at George Green however this is outside the buffer zones. An additional community facility and two schools are situated northwest of the site and approximately 750m to 1km from the site boundary (see Map 0004544/CM2/10).

Access and routeing

- 3.2.4 Access to and from the site would have to be via the A412 (Uxbridge Road). This would be possible from the two signalled junctions towards the north and south ends of the site. This would in effect create a fourth arm at these junctions. This road forms part of the SHN (or its equivalent in Slough), and thus mineral traffic would not have to pass any residential properties between the site and the SHN.

Duration of activities

- 3.2.5 No firm details are known regarding the amount of extractable sand and gravel at Site 10 or the duration of this extraction. In paragraph 10.2.1 a notional estimated yield for the site is calculated as 1.2mt. At a typical rate of production of 200,000 tonnes per year, this would take some six years to extract, with perhaps an extra year needed to complete the site's restoration. These figures should all be regarded with considerable caution.

3.3 Air Quality and Health

Dust

- 3.3.1 The most likely source of air pollution associated with sand and gravel extraction is particulate matter, or dust. "If not managed or controlled, dust from surface mineral operations can have a noticeable environmental impact and affect the quality of life of local communities. It is a material planning consideration. Residents can potentially be affected by dust up to 1km from the source, although concerns about dust are most likely to be experienced near to dust

sources, generally within 100m depending on site characteristics and in the absence of appropriate mitigation. Where [the effects of dust] cannot be adequately controlled or mitigated, planning permission should be refused". (*MPS2, Annex 1: Dust, para 1.1*)

3.3.2 The general tenor of the advice in MPS2 is that the control of dust is most likely to be a matter for consideration at the planning application stage, rather than being a matter that determines whether or not a site is suitable in principle for mineral extraction. Although the need to avoid adverse environmental impacts of dust may require a buffer to be left between the mineral working areas and the closest properties, it is generally unlikely that these buffers will be so extensive as to cast doubt on the suitability for extraction of the site as a whole. More specific mitigation measures, such as the sensitive location of plant sites, the incorporation of specific dust suppression measures in working schemes, and the provision of wheel washing facilities to prevent the spread of mud on to neighbouring roads, are matters that are addressed as part of normal development control.

3.3.3 Approximately 25% of Site 10 lies within 100m of residential properties, and 60% within 200m.

Air quality generally

3.3.4 In accordance with national legislation, South Bucks District Council has undertaken an air quality assessment of the District, which it keeps under regular review. A detailed assessment in 2004 led to the identification of a small number of 'hot spots' adjacent to the District's motorways, where the exposure of a very small number of residential buildings to levels of air pollution (specifically, pollution by NO₂) in excess of the relevant air quality objectives was predicted. No areas were identified where levels of particulate (PM₁₀) air pollution - that is, dust pollution of the type most likely to be associated with mineral extraction - exceeded the relevant objectives.

3.3.5 As a result of this assessment, in October 2004 the District Council established an Air Quality Management Area (AQMA) along the lines of the District's motorways - the M25, the M4 in the Dorney area, and the M40 (together with the short stretch of the A40 linking to the District/County boundary with Hillingdon).

3.3.6 The AQMA coincides with the lines of the motorways themselves. From the small-scale map that forms part of the designation order, it does not appear to include any land outside the immediate road corridor. However, the District Council recognises that the AQMA boundary does not mark a distinction between areas of 'good' and of 'poor' air quality. Selection of the road corridors as the AQMA allows the Council more flexibility in deciding on the actions to be taken to improve air quality in the District.

3.3.7 Site 10 does not lie adjacent to any of the District's AQMAs.

Health

3.3.8 Research on the health impacts of mineral working have focussed on the impacts on public health of particulate matter from opencast coal sites. MPS2 advice is that the potential impacts on public health of any mineral activity at particular site should be addressed at the planning application stage, having regard to the likely number and frequency of predicted exceedences

of the defined air quality objectives. Once again, this issue is not highlighted as being of immediate relevance in the in-principle assessment of the suitability of individual sites for mineral extraction. For present purposes, it may be regarded as subsumed within the more general Dust issue, as considered above.

- 3.3.9 A specialised aspect of the issue of health concerns the risk of birdstrike on aircraft which, in the very worst case, could result in the loss of an aeroplane with potential hazards to both those in the plane and those on the ground. To guard against this, the government has instituted a requirement for consultation between the planning authority and the airport concerned in respect of applications for certain types of development within 13km of certain defined airports (including Heathrow). Mineral extraction is specifically identified as an operation that can create a birdstrike hazard, because the sites concerned are commonly used for landfill or the creation of wetland, both of which are attractors of birds.
- 3.3.10 Site 10 lies within the 13km consultation zone for Heathrow, and therefore any application for mineral extraction would have to be referred to the airport authority for comment. Such reference does not mean that an objection to the proposal on aircraft safety grounds will necessarily or inevitably follow.
- 3.3.11 Site 10 also lies in an area where consultation is required - also for aircraft safety reasons - with the airport on any proposal to erect structure above 90m in height. Structures at mineral sites do not approach this height, and so this is not an issue in the assessment of Site 10.

Air Quality - Conclusion

- 3.3.12 It is concluded that dust, air quality and health issues are unlikely to be of prime relevance in the assessment of the in-principle suitability of a particular site for mineral extraction. The issues which they raise are primarily issues for the development control stage, when any appropriate mitigation measures can be considered.
- 3.3.13 Site 10 is not subject to excessive levels of particulate pollution.
- 3.3.14 Some 25% of Site 10 lies within 100m of dwellings. In other words, extraction from 25% of the site would be precluded if (without prejudice) it were decided that no extraction should take place within 100m of dwellings. However, it is important to note that the figure of 100m in paragraph 3.3.1 above is the distance where concerns about dust may be experienced in the absence of appropriate mitigation. Mitigation measures may however allow that distance to be reduced at this site. In these circumstances, it is considered that air quality issues do not, of themselves, render the site unsuitable in principle for mineral extraction.
- 3.3.15 Approximately 111 residential properties lie within 100m of the site boundary. Again, mitigation measures are likely to be needed to ensure that air quality impacts on these properties, and others further away, are kept within acceptable levels. There is no reason at this stage to suppose that, through the provision of an appropriate buffer within the site and/or the incorporation of specific measures to mitigate dust impacts, this issue could not be satisfactorily addressed at the planning application stage.

3.4 Utilities

- 3.4.1 From the limited information available, there are no records of the site being crossed, either above or below ground, by other public utilities such as pipelines or telecommunications cabling. There are overhead power lines south approximately 400m from the site boundary.

3.5 Cumulative impacts

- 3.5.1 Mineral working has taken place for some years at All Souls Farm, which lies immediately north of this site and on the opposite side of the A412. A recent visit to the site indicated that it is still being worked, however it is likely that there will be minimal cumulative environmental effects resulting from the identification of Site 10 as a Preferred Area. Although both sites are approximately 700m from each other, the sites are separated by the A412, which is part of the SHN and is a dual carriageway, therefore providing a buffer between the sites and having the capacity to take the additional minerals traffic. In addition, the current access to All Souls Farm and proposed access for Site 10 are a fair distance from each other and will not therefore concentrate high volumes of minerals traffic in one area.
- 3.5.2 Site 10 is close to Sites 5 and 8. Care would be needed to avoid cumulative environmental impacts on the residential areas between the sites - in particular at Love Hill House Farm between Sites 5 and 8, and at Middle Green between Sites 5 and 10.
- 3.5.3 The site would have direct access to the SHN, and would therefore not give rise to cumulative traffic impacts on local, non-SHN, roads.
- 3.5.4 Sites 10 and 8, together with Park Lodge Quarry/Site 4, would all access the SHN on the same stretch of the A412, although no two sites would use exactly the same access point as each other. There may be a need to consider phasing extraction from these sites in order to avoid an excess of additional HGV traffic on the relevant section of this road. Although the A412 is a dual carriageway for much of its length between Slough and the M40, the possible cumulative impacts of traffic in Slough itself, and on the single-carriageway stretch of the road through Iver Heath, may necessitate limits on the number of sites working simultaneously.
- 3.5.5 As the area between the A412 and the eastern part of Slough has no current or recent history of mineral extraction, there is an argument for avoiding the selection of a number of different sites in this area as Preferred Areas, in order to avoid relatively sudden and widespread disturbance in what is at present a relatively tranquil area.

3.6 Mitigation

- 3.6.1 The direct impacts on people of mineral extraction from Site 10 could be mitigated by the provision and suitable treatment of appropriate buffer zones around the site, and the sensitive design of the mineral extraction operations within it. These are matters for consideration at the development control stage rather than being matters that would directly influence the objective acceptability of the site for mineral working. Because of the presence of a relatively large number of dwellings close to the site, it is likely that extraction would not be able to take place right up to the site boundaries.

- 3.6.2 In the past, one method of 'mitigation' adopted by the County Council has been to draw the boundaries of Preferred Areas in Buckinghamshire so as to exclude land within 200m of sensitive receptors - hence the part-circular 'bites' out of Preferred Areas 1 and 2 in the new Minerals and Waste Local Plan. These boundaries were drawn when the 200m buffer distance was included as a formal policy in earlier versions of the Minerals Local Plan, rather than being indicative guidance as it now is.
- 3.6.3 As the 200m distance no longer has the same significance as formerly, it is considered that it would be reasonable in future not to exclude these part-circles from the Preferred Areas, but to draw the Areas' boundaries right up to the natural features (roads, streams, hedge lines or whatever they may be) that would form the most logical site boundary. The text of any future minerals development plan document would then explain that buffer zones, of a size to be determined at the application stage (guided by the content of SPG7) would be required around all sensitive receptors within or close to the Preferred Area. As well as ensuring that the 200m figure did not creep back into de facto policy, the inclusion of the buffer zones within the boundary of the Preferred Areas would help to ensure that they are fully integrated into the design of any future mineral operation.
- 3.6.4 The boundaries of Site 10 do not include any such 'part-circular buffers'. But if the site is to be considered for designation as a Preferred Area in future, the County Council may wish to consider whether or not its boundary should be adjusted to ensure the inclusion, if appropriate, of land that might be required as a buffer zone. This comment is made from a strictly neutral standpoint, and should not be interpreted as implying that the present writers believe that some such change might be appropriate or desirable.

4 LANDSCAPE AND VISUAL

4.1 Introduction

Location (See plan 0004544/LP/10)

- 4.1.1 Site 10 is located between George Green and Slough. It is bordered by the A412 to the northwest. This boundary also forms part of the Buckinghamshire County Boundary. Westfield Lane, a public footpath, runs down the eastern edge of the site beyond which is arable fields/pasture. A nursery is located to the south of the site. There are residential properties in George Green to the north.

Policy / Context

- 4.1.2 Site 10 is located within Landscape Character Zone Z13 (LCZ13) 'Wooded Plateau' as identified by the Landscape Plan for Buckinghamshire Part 1 published in 2001 by BCC and adopted by BCC as Supplementary Planning Guidance.

4.2 Site Description (See plan 0004544/LA/10)

- 4.2.1 Land use is agricultural. The site is a single arable (wheat) field with a farm track around the perimeter. The boundaries are a mix of well established hawthorn hedgerows and mature trees (to the north, east and west). South of the site lies an extensive area of glass houses, related to the nursery site.
- 4.2.2 The site is located on the outskirts of the built environment of Slough, next to the busy A412 (Uxbridge road) that runs parallel to the western site boundary. Between the site and highway is a public footway that runs alongside the western boundary of the site, currently separated from the site by a well established hedgerow bus stop is adjacent to the access gate to the field. A small triangle of land lies on the south west boundary of the site used as a recreation area for local residents.
- 4.2.3 The industrial developments, residential property rooflines and highway lighting, dominates the skyline in views to the west of the site. Vehicles on the highway generate noise, to a sufficient degree as to be audible within the core of the site.
- 4.2.4 The settlement of George Green is to the northeast of the site. The Public House and a number of properties along the southern edges of George Green are located close to the north boundary of the site. There are a number of mature trees located outside the site boundary.

4.3 Visual Relationship to the Surrounding Area (See plan 0004544/LA/10)

- 4.3.1 The landform of the site is comparatively flat, lack of effective screening provides open views of the nursery located to the south.

- 4.3.2 There is a public right of way that runs north to south parallel to the eastern boundary, outside of the site, separated by a length of unmanaged overgrown hedgerow, from which filtered views of the site are possible. On the day of inspection this right of way was impassable in a number of locations suggesting that it is little used by walkers.
- 4.3.3 To the west of the site there are filtered views of the settlement of Upton Lea, which can be seen over the managed hedgerow that runs alongside the A412. These properties are set back, on the opposite side of the highway and have eastward outlook overlooking the site. Views are available from upper floors of both houses and flats. From these properties mineral extraction will lead to a loss of visual amenity in views to the east.
- 4.3.4 The combination of existing mature trees and overgrown hedgerows along the north boundary provide a high level of visual containment for the site. However, it is possible to see a number of properties that are situated on the southern edges of George Green located adjacent to the northern boundary; these would also suffer from loss of visual amenity.

4.4 Evaluation

- 4.4.1 The landscape of Site 10 is unremarkable. The site is one large arable field lacking any field pattern or sub-division. It is degraded visually by the proximity of the highway and associated infrastructure to the west, leading to high noise levels and the visual distraction of moving traffic.
- 4.4.2 The most important element of the existing landscape are the trees along the boundaries to the site. These currently contribute to the partial screening of the site especially from the properties located outside the boundary to the north and west sides.
- 4.4.3 The necessary buffer zones required for protection of existing trees and the properties adjacent to the northern and southern boundaries should be taken into consideration for any future proposed development of the site. It is also possible that access could be an issue due to the restriction of alternative options. Mineral working would not lead to the loss of either a significant landscape or of significant landscape features either in a local or wider context.

4.5 Mitigation

- 4.5.1 There would be an immediate loss of visual amenity to the properties at George Green and the eastern edges of Upton Lea. Mitigation measures such as bunding and planting would screen the potential mineral extraction and landfill but would also screen long distance views over the site. This would be a temporary inconvenience to local residents.
- 4.5.2 To minimise the longer-term visual impact of extraction, the method of working should run in a general north west to south east direction away from properties that exist close to the site boundaries. Each subsequent phase should increase the distance between the working face, its mitigation and the residential area.
- 4.5.3 The provision of a processing plant would lead to additional visual impact and the type of plant and its location within an essentially flat landscape will require careful consideration however,

it is possible that mineral won from Site 10 might be processed in a plant initially provided for Lea North Quarry that exist to the north of the M40.

- 4.5.4 Where public rights of way exists adjacent to the eastern boundary, it would be necessary to allow for a suitable buffer zone and localised low level bunding or fencing to screen the mineral workings from any viewpoints along the right of way.

4.6 Townscape

- 4.6.1 None of the sites being considered in the present exercise is located in, or close to, any major built-up area. Mineral extraction from them is therefore not considered likely to have direct impacts on wider townscape issues, beyond the issue of the relationship with settlements as discussed in the preceding paragraphs.

Buckinghamshire County Council
Minerals Development Framework - Assessment of Potential Mineral Sites
 Site 10 – George Green

Landscape and Visual Site 10 – George Green

Factor	Description	Scale (At which Attribute Matters)	Rarity	Importance Overall Score	Magnitude of Impact Slight – moderate Adverse George Green	Assessment of Impact -1.5 George Green
Features – land cover	Grassland , arable, woodland	Large single arable field	Locally common	Low	Slight Adverse	-1
Features - boundary	Hedges, trees, water bodies	Trees and hedges to north west and east boundaries	Locally common	Medium	Moderate Adverse	-2
Features - internal	Trees, woodland	Open	Common	Low	Slight Adverse	-1
Character	Local distinctiveness	Featureless	Common	Low	Slight Adverse	-1
Visual effect - Residential	Visible from residential properties	Properties to the west separated by A412 dual carriageway glimpsed views. Properties to the south west glimpsed views. Properties at George Green adjacent Homewood	Views into site from enclosing residential development	High	Large Adverse	-3
Visual effect – ROW and public open space	Visible from adjoining/affected ROW and public open space	Local POS to south west. Footpath adjacent east boundary. Footpaths also follow A412	Filtered and screened views	Medium	Moderate Adverse	-2
Tranquillity	Noise and visual disturbance	Traffic on A412	Increasingly scarce	Low	Slight Adverse	-1
Cultural – landscape designations	Structure/Local Plans	Green Belt				

5 ECOLOGY

5.1 Introduction

- 5.1.1 Site 10 consists of one large wheat field. Permission was granted for the survey from the land owners, providing survey was conducted from the tracks and paths bordering the wheat crop.

5.2 Site Description

- 5.2.1 The boundary of the field is mainly hedgerow. A large stretch of hedgerow bordering a road is well maintained hawthorn (*Crataegus monogyna*). Other hedgerows are less intensively managed and more species rich (hawthorn, bramble *Rubus fruticosus*, elm *Ulmus sp*, ash *Fraxinus excelsior*, oak *Quercus robur*, holly *Ilex aquifolium*, elder *Sambucus nigra*, willow *Salix sp*, privet *Ligustrum sp*). Some sections of the boundary are fenced; there is also a line of mature conifer trees and a strip of tall ruderals and tall grass on the southern border.

5.3 Constraints

Ecological Designation

- 5.3.1 There are no statutory or non-statutory sites within the survey area. There are two biological notification sites within 1km of the study area, Love Lane hedgerow and Langley Park.

Protected Species

- 5.3.2 The area of tall grass and ruderals may provide suitable habitat for reptiles. All six native species of British reptile, grass snake (*Natrix natrix*), adder (*Vipera berus*), slow worm (*Anguis fragilis*), smooth snake (*Coronella austriaca*), sand lizard (*Lacerta agilis*) and common lizard (*Lacerta vivipara*) are protected by law. The Wildlife and Countryside Act (1981) makes it an offence to kill or injure all of these species, the latter two receive additional protection but have a restricted distribution.
- 5.3.3 Hedgerows and trees within the site provide potential nesting sites for breeding birds. All breeding birds are protected by the Wildlife and Countryside Act (1981) which makes it an offence to kill, injure or take any wild bird, or its nest (whilst being built or in use). It is also illegal to take or destroy eggs, and to disturb species on Schedule 1 of the act whilst nest building, attending a nest of young or eggs, and to disturb the dependent young of such birds. Disruption to breeding birds can be avoided by conducting works outside of the breeding season (February till August) or vegetation must be inspected by a suitably qualified ecologist immediately prior to removal for any signs of bird nesting activity.

Other Interest

- 5.3.4 None observed.

5.4 Evaluation

- 5.4.1 Site 10 does not include any statutory or non-statutory sites but has potential for protected species. The various habitats present are commonplace. Biodiversity and ecological interest appears to be generally low.
- 5.4.2 A map showing the results of the Phase 1 Habitat Survey is included as Map 0004544/P1/10, along with a copy of the target notes covering the site.

5.5 Geodiversity

- 5.5.1 The importance of protecting geodiversity ('geological conservation'), alongside the protection of biodiversity, is increasingly recognised nowadays - not least in government policy as set out in PPS9 *Biodiversity and Geological Conservation*, August 2005.
- 5.5.2 None of the ten sites under consideration in the present exercise is in, or close to, an area identified as significant for its geological resources. It is considered unlikely that mineral extraction from any of them would encounter issues relating to the protection of geodiversity, but in any case this would be a matter for consideration at the development control stage. For the present exercise, there is no evidence on which to regard any site as being more, or less, important for geodiversity than any other.

Buckinghamshire County Council
Minerals Development Framework - Assessment of Potential Mineral Sites
 Site 10 – George Green

Worksheet 1 Environment: Biodiversity - Plan Level
Scheme / option: Site 10, George Green

Area	Description of feature / attribute	Scale (at which attribute matters)	Importance (of attribute)	Trend (in relation to target)	Biodiversity and earth heritage value	Magnitude of impact	Assessment score
Farmed landscape/ Arable fields	Arable (wheat) crop	Local	Low		Low	Major negative	-1
Farmed landscape/ Grassland	Improved pasture	Local	Low		Low	Major negative	-1
Farmed landscape/ Grassland	Tall grass margin	Local	Low		Low	Major negative	-1
Farmed landscape/ Hedgerows	Hedgerows	Local and Regional	Low	Continued loss BAP objective to halt loss & achieve favourable management.	Low	Major negative	-1
Farmed landscape/ Tall grass	Reptiles	National	Medium – Protected Species	General decline	Medium	Minor negative	-1
Farmed landscape/ Trees and hedgerows	Breeding Birds	National	Medium – Protected Species	General decline	High	Minor negative	-1

Reference Source(s): Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC).

Summary assessment score: These scores have resulted from assessing the habitats present and evaluating the potential for impacts on the habitats and the presence of protected species. Ecology walkover survey can generally only identify the potential for species presence / absence. **N.B. The summary scores have been derived on the assumption that the species in the above table are present.** The overall appraisal category is derived by evaluating the importance of the attribute and the potential magnitude of the impact. Table 1 was used to estimate the overall appraisal category which was then given a numerical score as defined in Table 2. The larger the negative figure the worse the cumulative assessment of potential impacts. **N.B. Provided appropriate mitigation measures are implemented impacts on protected species are assumed to be minor negative in each case in the absence of detailed surveys.**

Table 1: Overall Appraisal Category

Importance	Magnitude of Impact				
	Major Negative	Intermediate Negative	Minor Negative	Neutral	Positive
High	Very Large Adverse	Large Adverse	Slight Adverse	Neutral	Large Beneficial
Medium	Moderate Adverse	Moderate Adverse	Slight Adverse	Neutral	Moderate Beneficial
Low	Slight Adverse	Slight Adverse	Slight Adverse	Neutral	Slight Beneficial
Negligible	Neutral	Neutral	Neutral	Neutral	Neutral

Table 2: Assessment score

Appraisal Category	Very Large Adverse	Large Adverse	Moderate Adverse	Slight Adverse	Neutral	Slight Beneficial	Moderate Beneficial	Large Beneficial
Numerical Score	-4	-3	-2	-1	0	1	2	3

Qualitative comments:__ The data in these tables is derived from desk study and walkover surveys. From this information there are no statutory sites within the site.

No impact on designated sites. There is potential for impacts on several protected species and species of conservation interest:

Through appraisal of potential impacts and the value of the attribute, whether habitat or species, all categories have been assessed as Slight adverse

Average assessment score = -1

Magnitude of Impact = Slight adverse

6 CULTURAL HERITAGE

6.1 Archaeology

6.1.1 Mineral extraction has the potential to damage or destroy archaeological remains. National policy (PPG16) gives general guidance on the approach to be adopted to the protection of the archaeological heritage. For mineral extraction, this is supplemented by a Code of Practice that has been agreed between the CBI and the local authorities.

6.1.2 Information on the archaeological interest and importance of the potential extraction sites has been obtained from the County Council's Archaeology team. The responses in respect of Site 10 are as follows:

Recorded archaeology on the site

Possible Roman road along eastern site boundary (CAS 4362).

Significant archaeology recorded in the vicinity of the site

Group of listed buildings immediately north of the site. Roman settlement excavated at Wexham Quarry 500m to the north.

Preliminary assessment of the site's archaeological potential

Potential for prehistoric/Roman occupation and Palaeolithic finds in gravel. Would require field evaluation.

Historic landscape sensitivity

19th century enclosure. Contained within field so low impact.

Overall sensitivity

Medium - due to archaeological potential.

6.1.3 The significance of the 'Medium' sensitivity ranking is explained as follows:

“[This] indicates the area has been assessed as not having major heritage constraints, however there is a recommendation for further study. The outcome of such studies would allow the site's sensitivity to be reassessed, whether by strengthening the argument for protection, or demonstrating that mineral extraction would not have unacceptable adverse impacts. For archaeological remains this would mean field evaluation, which if found to be of national importance could justify preservation in-situ. The preservation of remains of more local importance is also desirable but archaeological investigation and recording may be an acceptable mitigation. Where sensitive historic landscapes would be affected there is a preference to avoid extraction but if that were not possible then retention of historic patterns in the restored landscape would normally be sought.”

6.2 Listed Buildings and Conservation Areas

6.2.1 The site is not in, or close to, a Conservation Area. There are however listed buildings within 100m and 200m of the site. These are situated north of the site boundary at George Green, and south east at Middle Green. In addition, outside the 200m boundary approximately 750m to the north east of the site is a cluster of listed buildings located in Langley Park. Conservation Areas and Listed Buildings in the general area of the site are shown on Map 0004544/CM5/10.

6.3 Other cultural heritage features and designations

6.3.1 Langley Park Country Park is situated north east of the site and is designated as a registered park. There are no other cultural heritage designations - such as registered battlefields - on or in the vicinity of the site.

6.3.2 Site 10 is not included in a defined Archaeological Notification Area (i.e. an area within which there is specific evidence recorded on the Sites and Monuments record indicating the existence or probable existence of archaeological remains of county, national or regional importance). In the surrounding area ANAs are located north east, north west and south east of the site, although they are situated outside the 200m buffer area. However, the boundaries of ANAs are subject to change in the light of new information or re-interpretation of existing information. The archaeological assessment included in Section 6.1 above was provided in September 2006, and post-dates the drawing of the ANA boundaries shown on Map 0004544/CM5/10

7 WATER

7.1 Introduction

7.1.1 Mineral extraction can impact both directly and indirectly on the water environment: directly by affecting groundwater levels and quality, and by affecting the level of flood risk; and indirectly by affecting the wildlife habitats on and in the vicinity of the extraction site. The impacts on wildlife of extraction from the potential extraction sites are considered in Chapter 5. The present chapter considers groundwater and flooding issues.

7.1.2 **Groundwater** provides a substantial proportion of the drinking water supply, and it is therefore important that these sources are properly protected from contamination. The Environment Agency has defined Source Protection Zones (SPZs) to identify the areas most at risk from contamination. These zones, which are defined according to the length of time it may take pollution to travel to a water source, are as follows:

- Zone 1 (Inner protection zone): the area at greatest risk from contamination
- Zone 2 (Outer protection zone): the area where pollution will take longer to reach the water source (such as a borehole), and where therefore there is more potential for the pollution to disperse before it can create a contamination risk
- Zone 3 (Total catchment): the total area needed to support the removal of water from a borehole.

7.1.3 In Buckinghamshire, **flood risk** is associated principally with the county's rivers. The Environment Agency classifies land into three zones according to its susceptibility to flooding:

- Zone 1 (Low Probability), where there is assessed to be a less than 1 in 1000 chance of river flooding in any single year;
- Zone 2 (Medium probability), where there is between a 1 in 100 and 1 in 1000 chance of river flooding in any one year;
- Zone 3a (High Probability), where the risk is greater than 1 in 100, and Zone 3b (the Functional Floodplain), which is land where water has to flow or be stored in times of flood.

7.1.4 Emerging government policy (*Consultation on Planning Policy Statement 25: Development and Flood Risk*, December 2005; hereafter referred to as 'Draft PPS25') seeks to impose a risk-based sequential test in order to steer new development to areas at the lowest risk of flooding. Ideally, therefore, new development should be directed to sites in Flood Zone 1 if flood risk is to be minimised.

7.1.5 The advice in Draft PPS25 is that "Where it is not possible to steer new development to Zone 1, decision-makers allocating land in spatial plans should demonstrate that there are no reasonable options available in a lower risk category and should take into account the flood risk vulnerability of [particular] land uses" (Draft PPS25, para D4). Land-uses are divided into five categories according to their flood risk vulnerability:

- Essential infrastructure
- Highly vulnerable (e.g. hospitals, police, fire and ambulance stations etc)
- More vulnerable (e.g. houses)
- Less vulnerable (e.g. shops and offices)
- Water-compatible development (e.g. water treatment plants and public open spaces).

7.1.6 Mineral working and processing falls in the 'Less vulnerable' category, but landfill facilities are 'More vulnerable'. Both these land uses are considered to be appropriate in Zone 2 areas (areas with medium probability of flooding). In Zone 3a, only 'Less vulnerable' uses are appropriate, so if any mineral extraction site in such an area is to be restored by landfilling, the latter activity would have to pass an 'Exception Test' for it to be acceptable. In Zone 3b (the functional floodplain), the advice is that 'less vulnerable' and 'more vulnerable' uses should not be permitted.

7.1.7 In all cases where mineral extraction is proposed in Flood Zones 2 and 3, a planning application would have to be accompanied by a Flood Risk Assessment to assess the detailed vulnerability of the site to flooding, the risks posed by the proposed extraction, and the adequacy of the measures proposed to mitigate these risks. The advice summarised in paragraphs 7.1.5 and 7.1.6 is therefore to be regarded as providing a general framework only, and does not prejudice the more detailed assessment of individual planning applications at the development control stage.

7.2 Classification of Site 10

Groundwater protection

7.2.1 Based on information taken from the Environment Agency's website in September 2006, the whole of Site 10 is within a SPZ Outer Zone. To the east of the site there is also a Total Catchment area.

Flood risk

7.2.2 Based on information supplied by Buckinghamshire County Council in mid-2006 (and corroborated by maps on the Environment Agency's website in September 2006), the northern portion of Site 10 - around 30% of the total site - lies within Flood Zone 2 or 3. Unfortunately the data available does not allow these two zones to be distinguished from each other.

7.2.3 The portion of the site that is regarded as at risk of flooding is shown on Map 0004544/CM6/10.

8 SOILS

8.1 Introduction

- 8.1.1 The topic of particular interest under this heading relates to the quality of the farmland at each potential extraction site. Defra, and its predecessor MAFF, has adopted a method of assessing the quality of farmland to allow informed choices to be made about its future use within the planning system. This assessment is known as the Agricultural Land Classification (ALC), and is based on the long-term physical limitations of the land for agricultural use. Factors affecting the grading of any individual site are climate, site and soil characteristics, and the interactions between them.
- 8.1.2 The ALC classifies land into five grades, from Grade 1 ('excellent') to Grade 5 ('very poor'). Grade 3 is subdivided into 3a ('good') and 3b ('moderate'). Land in Grades 1, 2 and 3a is regarded as constituting the 'best and most versatile land' (BMV land) - that is, the land which in agricultural terms is most flexible, productive and efficient and can best deliver future crops. The ALC classification of any site is based on its intrinsic characteristics rather than on the way in which it is currently farmed. Land which is not in agricultural use can therefore be graded within the ALC system¹.
- 8.1.3 Government advice is that where significant development of agricultural land is unavoidable, planning authorities should seek to use areas of poorer quality land (Grades 3b, 4 and 5) in preference to that of a higher quality except where this would be inconsistent with other sustainability considerations, and that in lowland areas at least (such as Buckinghamshire), little weight in agricultural terms should be given to the loss of agricultural land outside the BMV grades (*PPS7 para 28*). Although MAFF/Defra have in the past adopted a 'worst first' policy within BMV land - i.e. if BMV land has to be developed, land in Grade 3a should be chosen for development ahead of land in Grade 2, and land in Grade 2 ahead of land in Grade 1 - this requirement is not formally set out in current government policy. Nevertheless, such an approach would be in accordance with wider sustainability considerations.
- 8.1.4 In the past - notably at the time of the public inquiry into an earlier version of the Buckinghamshire Minerals Local Plan in 1991 - it was government policy that mineral extraction should not be allowed on BMV land, where land of a lower quality was available. This policy has since changed. Mineral extraction is now not automatically ruled out on extraction from BMV land, so long as the land is likely to be restored to its former physical characteristics. Non-agricultural after-use can be acceptable even on BMV land if it does not alter the physical characteristics of the land (e.g. if the land is returned to open space use rather than to water or to built uses).

¹ General information regarding the ALC as described in this chapter is based largely on a Defra leaflet which can be seen at <http://www.defra.gov.uk/farm/environment/land-use/pdf/alcleaflet.pdf>

- 8.1.5 Unfortunately, there is no consistent data available of the ALC of particular pieces of land, such as would allow the accurate comparison of sites in terms of this issue. The national survey carried out in the 1960s and 1970s is not regarded as sufficiently accurate for use in the assessment of individual fields. Until fairly recently, MAFF/Defra were sometimes able to undertake surveys of individual sites on request, but since 1999 the resources available for such surveys have been substantially reduced. Most such surveying is now undertaken by private consultants. Over the years changes have also been made to the criteria which define the ALC categories, so a survey undertaken now may not return the identical results to a survey of the same site dating from some years ago. In assessing the agricultural quality of a particular parcel of land, it is therefore necessary to make a judgement on the quality of available data.
- 8.1.6 Other soil-related issues, such as the impact of mineral extraction at a particular site on soil structure, are considered to be outside the scope of the present exercise. The impact of mineral extraction on farm structures and operation is also outside the scope of this exercise.

8.2 Classification of Site 10

- 8.2.1 Because this site has not been considered previously in either the development control (so far as is known) or the plan-making processes, no detailed ALC information for it is available. The only mapped information available for this site is that derived from the County Council's GIS system, which shows the majority of the site (perhaps 80%) as lying within ALC Grade 1, and the remainder - in the north of the site - as Grade 3 (see Map 0004544/CM8/10). This mapped information appears to be very generalised, and its reliability for the present exercise should therefore not be regarded as particularly high.

9 TRANSPORT AND ACCESS

9.1 Introduction

- 9.1.1 National policy advice is that in preparing development plans, local authorities should (inter alia)
- where possible, locate developments generating substantial freight movements away from congested central areas and residential areas, and ensure adequate access to trunk roads;
 - promote opportunities for freight generating development to be served by rail or waterways by influencing the location of development and where appropriate protecting realistic opportunities for rail or waterway connections to existing manufacturing, distribution and warehousing sites adjacent or close to the rail network [or] waterways (*PPS13 paragraph 45*).
- 9.1.2 PPG13 also notes that the transport of minerals and spoil as well as material for landfill sites can have significant environmental impacts. It therefore states that “local authorities should seek to enable the carrying of material by rail or water wherever possible ... mineral planning authorities should encourage the establishment of voluntary mineral site transport plans in consultation with local communities”. (*PPG13 para 47*).
- 9.1.3 The present chapter assesses the transport and access issues at the site in the light of the above guidance. It also has regard to Buckinghamshire County Council’s policy of directing freight movements by road to the roads that constitute the strategic highway network (SHN). Comments on road transport issues have been informed by discussion with the Council’s highways development control section, but should not be regarded as binding in the assessment of any specific proposal.

9.2 The transport network at Site 10

- 9.2.1 Site 10 lies adjacent to the north-eastern residential areas of Slough, immediately east of the A412 (Uxbridge Road). The A412, which is dualled at this point, links Slough to the M40, Rickmansworth and Watford, and also provides access to the A4007 which links to Uxbridge and the outer suburbs of West London. Then A412 is part of the SHN.
- 9.2.2 The site has no other frontages to public roads. The road network in the vicinity of the site is shown on Map 0004544/CM1/10
- 9.2.3 The Slough Arm of the Grand Union Canal is some 600m to the south of Site 10, but is separated from it by land in intensive nursery use. There are no other waterways or railway lines close to the site which might be suitable for transporting mineral. The nearest railway line is the main Paddington line at Burnham, around 750m to the south, on the opposite side of the canal.

9.3 Access options

- 9.3.1 The only potential road access to Site 10 would be by creating a new access on to the A412. Although the road is dualled alongside the site, there are signal-controlled junctions close to both its southern and northern ends. These junctions at present each have only three arms, providing access between the A412 and the residential road The Frithe in the south, and between the A412 and Church Lane (leading towards Wexham Park Hospital) in the north. The provision of a fourth arm at either of these junctions, giving access into Site 10, would appear acceptable in principle, although as the A412 is in Slough Borough alongside the site, the views of that Authority would be important in reaching a final view.
- 9.3.2 There is no realistic scope for securing access to the site by rail or water.

10 MATERIAL ASSETS

10.1 Introduction

10.1.1 This Chapter considers in general terms the following issues:

- (i) The estimated yield of sand and gravel from the site per hectare. If and when the County Council is looking to identify additional Preferred Areas for mineral extraction, the volume of mineral that will be required to ensure that the landbank remains topped up will be known. In terms of the scale of depletion of sand and gravel resources, there would be nothing to choose between any of the potential sites - one million tonnes from one site would represent exactly the same diminution in the resource as one million tonnes from any other site. But in principle, a site with a higher yield of sand and gravel per hectare will require the disturbance of a smaller surface area of land to produce the same quantity of mineral. The disturbance to existing material assets, in the form of landscapes, habitats, and so on, would be reduced by selecting a higher-yielding site.

Data on expected site yields has been taken from information supplied at different times by the prospective mineral operators who have put the sites forward for consideration as Preferred Areas. Where no such information has been supplied, a 'rule of thumb' yield of 60,000 tonnes per hectare (equivalent to a gravel deposit approximately 3.75m in thickness) has been used. This figure has been agreed with the County Council as being broadly representative of the deposits in this part of Buckinghamshire, but it is recognised that the thickness of the deposits can in practice vary considerably in a relatively small area.

- (ii) The amount of overburden that would require to be removed before the mineral deposit is reached (i.e. the thickness of the topsoil and subsoils etc above the gravel seam). Consistent information on this subject is not available, but the chapter includes such information as can be traced.
- (iii) Issues relating to mineral sterilisation: Would the mineral reserves at this site be sterilised if they were not worked at some point in the near future, or could they in practice be worked at any time?

10.2 Assessment of Site 10

10.2.1 No information is available regarding the likely yield of Site 10. Its total area is 25.3ha, and allowing for a notional 20% of the site being required as buffers to neighbouring properties, etc, the net workable area would be around 20.2ha. Assuming a yield of 60,000 tonnes per hectare (see above), this would indicate a yield from the site of just over 1,200,000 tonnes. This corresponds to a yield of 47,900t/ha gross.

- 10.2.2 These figures are used in the assessment of this site without prejudice to the County Council's views (i) on the amount of the site that may be required as buffers (if indeed the site is to be worked at all), or (ii) on the quantity of recoverable mineral at the site, which may or may not be seen to depart from the current estimates of the sites' yields, if and when detailed borehole data is supplied as part of any future application.
- 10.2.3 No information is available regarding the thickness of the overburden at either site.
- 10.2.4 This site is not linked operationally to any existing quarry. It is considered to be large enough to be worked as an independent unit if and when it were judged to be acceptable for extraction. Therefore, no mineral sterilisation issue arises in the assessment of the site's suitability for designation as a Preferred Area.

11 OTHER ENVIRONMENTAL ISSUES

11.1 This Chapter addresses briefly the following issues associated with the environmental objectives in the MWDF sustainability framework:

- Issues relating to mineral waste (i.e. the surplus materials created as a result of excavation for minerals)
- Issues relating to broad restoration matters
- Issues relating to sustainable waste management
- Issues relating to energy generation and use
- Issues relating to climate change.

11.2 On **mineral waste**, it has been agreed with Buckinghamshire County Council that no significant issue arises at any of the potential extraction sites. The issue is of particular importance in the case of deep-lying minerals (e.g. coal), or minerals requiring substantial processing (e.g. china clay), the extraction of which can give rise to substantial issues relating to the disposal of the spoil associated with extraction. But for sand and gravel extraction, the amount of mineral waste produced - the overburden which must be removed to get at the underlying gravel, and the silt lagoons formed from the washing of the extracted mineral - is relatively very small, and is conventionally satisfactorily dealt with as part of the overall restoration of the site. No reason is seen why this should not be the case with the potential sites that are under consideration in the present exercise.

11.3 On **climate change** issues, it has again been agreed with the County Council that no differentiation can be made between the ten potential sites at the present level of assessment.

11.4 On general **restoration** issues, the present report does not make any pre-judgements about the type of restoration that would, or would not, be acceptable at each of the potential sites. However, there is an argument that says that to identify for extraction sites that could, realistically, only be restored by landfilling (i.e. sites which are likely to need to import waste to secure satisfactory restoration) would be prejudicial to objectives for **sustainable waste management**. These objectives seek to reduce levels of landfilling over time. Moreover, Buckinghamshire already has sufficient identified landfill space to meet future requirements, for the medium term at least. For these two reasons, it can be argued that it would be inappropriate to favour as Preferred Areas for mineral extraction sites which would require landfill in their restoration, ahead of sites which would not.

11.5 On this argument, Site 10 would be seen as one of the less favoured sites, since landfilling would be needed for restoration.

11.6 On the opposite side of the coin, if a site were to be restored by landfill - and specifically by landfilling with non-inert waste - this would create the potential for **energy generation** by making use of the landfill gas that would be generated.

- 11.7 The extraction of minerals involves the **use of energy** to power the excavation machinery, the plant that processes the excavated material, and the transport used to move the excavated material within and away from the quarry site. For the purposes of the present exercise, it is not considered possible to draw any realistic site-specific or comparative conclusions about the ten sites under investigation. There are considered to be no significant differences between sites in terms of the general issues which might lead to site-related differences in energy use, such as differences in the difficulty of working the mineral at different sites, or significant differences in their distances from markets.

12 SOCIAL AND ECONOMIC ISSUES

12.1 Introduction

12.1.1 The social and economic issues deriving from the SA framework are, in the main, of limited significance for the present exercise of assessing potential mineral extraction sites. The SA objectives of meeting the need for minerals, of maximising community participation, and of using sound science responsibly are not considered to be matters that have any direct bearing on the present exercise. All of the sites under consideration have the potential to contribute to meeting future aggregates needs, and so this is not an issue in assessing the sites, and ultimately in comparing them against each other. Issues relating to community involvement and responsibility will similarly be common to all sites; while issues regarding the responsible use of sound science are likely to be of more relevance in the field of waste than in minerals.

12.1.2 It is not the role of the minerals planning process to seek to meet the needs or wishes of individual mineral site operators, although it is acknowledged that “the government wishes to see indigenous mineral resources developed within its broad objectives of encouraging competition, promoting economic growth, and assisting the creation and maintenance of employment” (*MPG6 para 10*). In this context it may be noted that employment levels in the minerals industry in Buckinghamshire will, broadly, not be affected by the choice of sites as future Preferred Areas, since the absolute level of extraction (and hence of the employment required to achieve that level of extraction) in the county is likely to remain the same whichever site or sites are chosen. It is not considered appropriate in the present exercise to make assessments on the issue of competition, as ownership of sites - and indeed of whole companies - can change over time, and judgements based on the position in 2006 may prove inappropriate in the future.

12.1.3 This leaves just two topics deriving from the social and economic SA objectives: the potential impact of extraction on recreational interests, and the potential impact on sensitive employment uses.

12.2 Site 10: Recreational Interests

12.2.1 There are no public rights of way within Site 10, however footpath WEX/9/1 coincides with the eastern boundary of the site, linking George Green to the north with Middle Green Road to the south.

12.3 Site 10: Sensitive employment uses

12.3.1 No employment uses have been identified close to Site 10 which might be sensitive to, and adversely affected by, mineral extraction from this site.

SUMMARY DETAILS FOR SITE 10

No. and name	10 - George Green
Site Area gross	25.3 ha
Site Area net	20.2 ha ?
Estimated Yield	1.2mt ?
Yield/ha gross	47,900 ?
Yield/ha net	60,000 ?
Overburden thickness	n/a
Possible duration of extraction	6 years ?
% of site within 100m of residential development	25%
% of site within 200m of residential development	60%
Number of residential properties within 100m	110
Number of residential properties within 200m	350
No. of residential properties within MWLP buffer zone	220
Other receptors within 200m	Nursery
No. of houses on route to Strategic Highway Network	0
Overall landscape assessment score	-1.5
Overall ecological assessment score	-1
Archaeological sensitivity	Medium
Proximity of listed bldgs, Conservn Areas etc	LB wi 200m
In Source Protection Zone?	100% OZ
In flood risk zone?	30% Z2-3
Agricultural land grading	1 / 3 (gen)
Potential for access by means other than road	None
Public Rights of Way within site?	No, but adj
In Colne Valley Park?	No
In birdstrike consultation zone?	In 13km zone
In Air Quality Management Area?	No issue
Is restoration of site to land desirable?	Yes
Would minerals be sterilised if not worked imminently?	No
Impacts on utilities	None
Acceptability of access and haul route	Acceptable < 1km from SHN
Renewable energy possible?	Yes
Proximity of other/recent workings	Within 1km