

**Buckinghamshire County
Council**

**Minerals Development
Framework**

**Assessment of Potential
Mineral Sites**

**Site 1
The Lea South**

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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 assumption

- 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 1 (The Lea South) lies very close to Buckinghamshire's boundary with the London Borough of Hillingdon, about 2km north of the town centre of Uxbridge. It is immediately east of M40 Junction 1, at which point the M40 loses its motorway status and becomes the A40(T). The A40(T) and the junction sliproads form the northern boundary of the site. A channel of the River Colne adjoins the north-eastern boundary of the site, while the Grand Union Canal lies about 120-160m to the east.
- 2.2 A small cluster of development known as Willowbank lies adjacent to the south-eastern boundary of the site. The village of Denham is some 1.5km north of the site, while the nearest large town in Buckinghamshire is Gerrards Cross, some 8km to the north-west.
- 2.3 Land immediately north of the site (across the A40) is currently the site of mineral extraction. This site is known as The Lea Quarry, which is being worked by Harleyford Aggregates Ltd. Material from this quarry is offloaded on to barges on the Grand Union Canal, and transported away from the site for processing at a site in West Drayton (Hillingdon). To distinguish the present quarry from Site 1, the former is sometimes referred to in this report as 'The Lea North'.
- 2.4 Site 6 in the present assessment (New Denham) lies to the west of, and almost immediately adjacent to, Site 1. Land south of Site 6 is identified as Preferred Area 2 for mineral extraction in the newly-adopted MWLP.

Use and character

- 2.5 The site is generally flat land, currently in agricultural use. It is crossed from south-west to north-east by an overhead power line, and another overhead line runs just to the west of the site. There is a broken line of trees along the south-east boundary, and a small wooded area on the western boundary; otherwise the boundaries are open. A small stream crosses the eastern part of the site from north-east to south-west. There are some intermittent trees along the line of this stream, and a larger area of woodland further west within the site. (For further details, see Chapter 4 of this report.)

Area and potential mineral yield

- 2.6 Site 1 has a gross area of 13.4ha (as measured from GIS maps). The prospective operator has referred to a site area of 12ha; this is assumed to be the net workable area. The operator estimates that the site could yield 500,000 tonnes of sharp sand and gravel.

Planning history

- 2.7 Application SBD/205/89 for extraction of sand and gravel from the site and its removal by barge, with progressive restoration to a landscaped lake, was refused by the County Council on 11 October 1989 for three reasons: because the site was not a Preferred Area; because working would be detrimental to the local landscape; and because of the unacceptable loss of amenity to residents in the Willowbank area.
- 2.8 An appeal against this decision (conducted by means of written representations) was dismissed on 6 March 1991. The Inspector rejected the objection regarding the impact on Willowbank, having regard to ambient noise levels and the visual impact of A40 - he concluded that a 100m separation distance together with a 5m-high bund would overcome visual objections, and he noted that there was no objection on noise from the Environmental Health Officer to the proposed removal of material by barge - although the inference is that removal of the material by road vehicles would have been more problematical. His principal conclusion was as follows: "Extraction from the appeal site resulting in a further extensive water feature, inappropriate in this situation and detracting from the appearance and character of the wider locality and this important approach to the Regional Park does amount to a serious and overriding objection to the present proposal".
- 2.9 The site was put forward on behalf of Boyers for consideration at the 1991 Minerals Local Plan Inquiry, but this submission was rejected by the LPI Inspector, who saw no reason to disagree with the appeal Inspector. The LPI Inspector considered that the site is prominent and impossible to screen satisfactorily during operations, and mineral working would detract from character and amenity of the area. He also considered that working this site in conjunction with others in the area could lead to a preponderance of workings around an important entrance to the Colne Valley Regional Park. In the absence of need, he concluded that the environmental damage that extraction would cause made it unacceptable, at that time, as a Preferred Area.
- 2.10 The site was again put forward on behalf of Boyers in 2003, in connection with the preparation of the now-adopted MWLP. As noted in paragraph 1.2, the County Council declined to consider additional potential sites at the time of preparation of the MWLP, and this conclusion was accepted by the MWLP Inquiry Inspector.
- 2.11 There have been no planning applications for extraction from this site since the application in 1989.

Operator's proposals

- 2.12 In their submissions in 2003, the agents for Boyers proposed that this site be worked as an extension to The Lea North, with material being taken by conveyor to that site via a tunnel under the A40, and then transported to West Drayton by barge for processing (as with the present material from The Lea North). No plant would be required on Site 1, other than that directly associated with the extraction of the mineral and its transportation to The Lea North. Restoration was proposed to be to a landscaped lake, possibly with additional landscaping and possibly with the creation of a new footpath link between this site and The Lea North.

- 2.13 In assessing this site, the County Council makes no commitment to agreeing that the operator's proposals would constitute an acceptable method of working and/or restoring the site, in the event that it should in due course be identified as a Preferred Area.

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 1 lies between the A40 (to the north), the A4020 (Oxford Road) to the west, and the small settlement of Willowbank to the east. Approximately 128 residential properties lie within 200m of the site, mostly in Willowbank (Willow Crescent, River Walk and Lime Walk), but including a small number of properties on either side of Oxford Road, and some in Oakside to the south of the site. (see Map 0004544/BF/01)
- 3.2.2 About 35 properties lie within 100m of the site boundary. About 30 of these are in Lime Walk, River Walk and Willow Crescent West; the remainder are on the east side of Oxford Road close to the A4020/M40 roundabout. (see Map 0004544/BF/01)
- 3.2.3 The site adjoins the M40/A40, but all the identified residential properties are on the south side of that road. Hence this major road does not provide any buffering effect to properties that might otherwise be affected by extraction from Site 1. Approximately four properties within the 200m zone, but outside the 100m zone, are on the far (west) side of the A4020 from the site. This is not assumed to be a 'major road' in terms of SPG7, but it may be that the impacts on these properties of any extraction from Site 1 would be lessened as a result of a combination of distance and the 'disturbance' already created by the road and its traffic.
- 3.2.4 Other community facilities within 200m of the site boundary include a football pitch immediately south of the site, and allotments immediately to the south-west. New Denham Community Hall fronts Oxford Road adjacent to the football pitch, just within the 200m distance from the site. A listed building lies a little further south along Oxford Road, very close, to but just beyond, the 200m distance. The community hall and the listed building are shown on Maps 0004544/CM2/01 and 0004544/CM5/01.

Access and routing

- 3.2.5 Access to and from the site would not be allowed from either the A40 or the A4020. The mineral operator with an interest in the site proposes that material be removed from the site by means of a tunnel under the A40, which would link it to the existing operation at The Lea North. Excavated material from The Lea North is taken by canal to a processing facility at West Drayton (London Borough of Hillingdon), and the operator proposes that this arrangement should continue in respect of material from The Lea South. If this were to be the case, there would be no immediate or new traffic impact associated with extraction from The Lea South. Any alternative arrangement involving direct removal of the material from The Lea South (see paragraph 9.3.5) would create new disturbance close to properties in Willowbank and/or on Oxford Road.

Duration of activities

- 3.2.6 The mineral operator estimates that there are around 500,000 tonnes of extractable sand and gravel within Site 1. If the rate of extraction at The Lea North were maintained for this southern site, it may be expected that extraction from the site may last for some three years, with perhaps a further year's disturbance while restoration of the site was completed.

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 35% of Site 1 lies within 100m of residential properties, and 70% 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 1 lies adjacent to the very end of the M40 and the start of the A40(T), and thus adjoins the designated AQMA.
- 3.3.8 The District Council has produced, for consultation purposes, an Air Quality Action Plan (March 2006), which includes a list of proposed measures designed to address air quality issues in the AQMA. None of these measures has a direct bearing on the suitability of individual sites for mineral extraction. The Actions that could be achieved through the planning process are either very general policy matters (e.g. seeking to ensure that freight movement is provided in an environmentally sensitive manner), or else are matters for assessment case by case at the development control stage (e.g. requesting Air Quality Assessments in association with applications for developments which may affect the AQMA). There is nothing to suggest that mineral extraction close to the AQMA should be discouraged as a matter of principle for air quality reasons.

Health

- 3.3.9 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.
- 3.3.10 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.
- 3.3.11 Site 1 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.
- 3.3.12 Site 1 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 1.

Conclusion

- 3.3.13 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.
- 3.3.14 Site 1 lies adjacent to an area where there are concerns about levels of NO₂ pollution, but mineral extraction per se is not a significant contributor to this form of pollution. The general area is not subject to excessive levels of particulate pollution.
- 3.3.15 Some 35% of Site 1 lies within 100m of dwellings. In other words, extraction from 35% 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.
- 3.3.16 Approximately 35 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 An overhead power line crosses Site 1 from south-west to north-east, with three pylons located within the site - one towards its south-western boundary, and the other two towards its north-eastern corner. 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. A second overhead power line passes just to the north-west of the site, with a pylon located in the grounds of the Highways Agency depot which separates the site from the roundabout at M40 Junction 1.

3.5 Cumulative impacts

- 3.5.1 Site 1 is adjacent (across the A40) to the existing mineral working at The Lea North, but because they are in the control of the same operator it is expected that the two sites would be worked in sequence rather than simultaneously. The consequences of identifying this site as a Preferred Area would be the extension of the period of extraction in the area by some three years, but otherwise no cumulative impacts would arise from the working of the two sites.
- 3.5.2 Site 1 lies immediately to the east of Site 6, which is in turn a northern extension of Preferred Area 2 in the current MWLP. Simultaneous working of Site 6 and PA2/Site 1 would be likely to lead to adverse cumulative environmental impacts on the settlements of New Denham and

Willowbank, by reason of the general disturbance in the area. The two sites would not use the same road access, so there would be no material cumulative traffic impacts.

3.6 Mitigation

- 3.6.1 The direct impacts on people of mineral extraction from Site 1 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 1 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/01)

- 4.1.1 Site 1 is agricultural land to which there is no public access, and within which there are no public footpaths or other rights of way. However the site is bounded to the north by the M40 motorway and to the southeast by the River Colne and the settlement Willowbank. To the southwest is the A4020 Oxford Road leading into Uxbridge A4020, which separates New Denham from the site and affords additional viewpoints.

Policy / Context

- 4.1.2 Site 1 is located within Landscape Character Zone Z12 (LCZ12) 'Colne Valley' as identified by the Landscape Plan for Buckinghamshire Part 1 published in 2001 by BCC and adopted by BCC as Supplementary Planning Guidance. The site is consistent with the character of LCZ12 and occurs lies in a part of the LCZ12 where the character of the zone is highly developed within the Colne Valley Park.
- 4.1.3 The site is located immediately south of the existing mineral extraction processing operation at The Lea North Quarry, which appears to be an actively worked site with a conveyor system for removal of its material.

4.2 Site Description (See plan 0004544/LA/01)

- 4.2.1 The land use is predominantly grazing/pastoral. The paddocks can be broadly divided into three enclosures, sub-divided north to south by overgrown hedges and groups of mature trees. They are and is used mainly for horse grazing.
- 4.2.2 The M40 motorway that runs parallel to the northern site boundary is positioned on a high embankment which, together with heavy traffic and lighting for the road, dominates the skyline to the north of the site. Vehicles on the motorway generate noise, to a sufficient degree as to be audible within the core of the site.
- 4.2.3 The parcel of grassland to the east of the site is enclosed by the River Colne that runs parallel to the boundaries of the site. To the northeast of the site the River Colne intersects with the Grand Union Canal and runs south to the eastern side of the settlement of Willowbank. This parcel of grassland is also bounded by a watercourse drain that runs through the site north to south, marked by mature willow trees.
- 4.2.4 To the south of the site outside the site boundary are further grazing fields. To the east is a community centre and recreational field. The watercourse runs through the site, runs parallel to the recreational field boundary.

- 4.2.5 Immediately adjacent to the southwest corner of Site 1 is a farmstead with a collection of barns that open onto the site boundary. To the rear of this, outside the site boundaries is a large area used for allotment gardens. A track runs parallel to this marking the site boundary with an overgrown hedge blocking views into the site.
- 4.2.6 The boundary to the west is formed by the Highways Agency Denham Maintenance Compound.
- 4.2.7 The general visual amenity is marred by the electricity pylons that cross the site from the northeast to the southwest corner of the site.
- 4.2.8 The traditional field pattern bounded by low cut hedgerows has been lost, having been replaced mainly by post and wire fencing enclosing pony paddocks. There is a strong woodland belt containing mature oak, pine and poplar trees, separating separates the western corner of the site from the rest of the site.

4.3 Visual Relationship to the Surrounding Area (See plan 0004544/LA/01)

- 4.3.1 The landform of the site is comparatively flat, with the M40 elevated along the northern boundary overlooking the site.
- 4.3.2 There are no public rights of way through the site. However, the site can be viewed from a number of vantage points along the M40 motorway where there is little screening vegetation. The road being elevated provides travellers with a good vantage point for panoramic views over the whole area.
- 4.3.3 To the east of the site filtered views of the settlement Willowbank can be seen through mature willow and poplar trees. These properties are set back, with a westward outlook overlooking the River Colne to the site. From these properties mineral extraction will lead to a loss of visual amenity in views to the west.
- 4.3.4 The combination of existing mature trees and overgrown hedgerows along the south and west boundaries and the M40 motorway embankment provides a high level of visual containment for the site.
- 4.3.5 The farmstead located along the southwest boundary can be clearly seen from within the site with little vegetation in the foreground. A number of mature oak trees and overgrown hedgerows exist behind the farm buildings, restricting views out of the site.
- 4.3.6 Views into the site are available from the properties situated between the site and the Oxford Road. These are mainly limited views from the car parks of the public house, community centre and the recreational field that borders the site.

4.4 Evaluation

- 4.4.1 The landscape of Site 1 although is in a generally satisfactory condition, but is not remarkable and is a typical example of its local landscape character. The most important elements of the existing landscape are the mature tree cover that exists in the woodland belt within the centre

of the site, and with the River Colne that runs adjacent to the eastern boundary that and provides visual amenity to a site which is otherwise dominated by the visual intrusion of the M40 motorway.

- 4.4.2 The proximity of the M40 motorway and its elevated position overlooks the site from all aspects to the north of the site and its associated infrastructure leads to continuous high noise levels and visual distraction of moving traffic.
- 4.4.3 In general terms the landscape of Site 1 would not be significantly affected by development that would include provision for protection of watercourses and existing significant tree cover within the site. The site would however, benefit from future enhancements, especially additional planting along the northern edge of the site.

4.5 Mitigation

- 4.5.1 The landscape quality and character falls within a zone of transition between a degraded landscape in the north and a mature well-established landscape pattern in the south and west. Mineral extraction could be undertaken within the northern part of the site and the landscape restoration proposals would restore the landscape and potentially improve the general level of tree and shrub cover within this part. The extent of mineral extraction in the other parts should be carefully considered to cause the minimum loss of mature tree cover.
- 4.5.2 There would be Mineral extraction would lead to an immediate loss of visual amenity to the properties at Willowbank. Mitigation measures such as bunding and planting would screen the potential mineral extraction and any landfill, but would also screen long distance views over the site. This would be a temporary inconvenience to local residents. Planting would also be appropriate on the embankment to the M40 motorway.
- 4.5.3 To minimise the longer-term visual impact of extraction, the method of working should run in a general south to north direction away from properties that exist close to the boundaries of the site. Each subsequent phase should increase the distance between the working face, its mitigation and the residential area.
- 4.5.4 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 would require careful consideration. however, it is possible that minerals won from Site 1 might be processed in a plant initially provided for Lea North Quarry that exist to the north of the M40.

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 1 - The Lea South

Landscape and Visual - Site 1 Lea South

Factor	Description	Scale (At which Attribute Matters)	Rarity	Importance	Significance of Impact	Assessment Score
					Lea South	Lea South
Features – land cover	Grassland , arable, woodland	Local pastureland Horse grazing paddocks	Grazing land locally common	Low	Slight adverse	-1
Features - boundary	Hedges, trees, water bodies	Local	Locally common	Medium	Moderate adverse	-2
Features - internal	Trees, woodland	Local	Mixture of degraded hedgerows and some mature hedgerow trees	Low	Slight adverse	-1
Character	Local distinctiveness	Local	Small fragment of open space enclosed by development	Medium	Moderate adverse	-2
Visual effect - Residential	Visible from residential properties	Local	Views into area from enclosing development	Medium	Moderate adverse	-2
Visual effect – ROW and public open space	Visible from adjoining/affected ROW and public open space	Local Visual Amenity	Views into area from M40 (no ROW)	Low	Slight adverse	-1
Tranquillity	Noise and visual disturbance	Locally Important	Increasingly scarce	Medium	Slight adverse	-1
Cultural – landscape designations	Structure/Local Plans		None		Neutral	0
Overall Score					Slight-moderate adverse	-1.5

5 ECOLOGY

5.1 Introduction

5.1.1 Site 1 comprises mainly grassland with no public access. The site is bounded to the north by the M40, and to the east by the River Colne. Access for surveys was granted by the landowners, however, but access to the most westerly field was compromised by stinging nettles and barbed wire fences and so the habitat was assessed from the woodland on the eastern border.

5.2 Site Description

5.2.1 The site is composed of four blocks of roughly approximately equal sized and parallel habitat. Two fields of improved grassland containing common species such as yarrow (*Achillea millefolium*) and ribwort plantain (*Plantago lanceolata*), an area of broadleaved woodland (predominantly Crack Willow (*Salix fragilis*) and Ash (*Fraxinus excelsior*) and an area of species poor semi-improved grassland (ribwort plantain *Plantago lanceolata*), Ladies bedstraw *Galium verum*) and oxeye daisy (*Leucanthemum vulgare*). Boundaries to these areas are mainly fences although hedgerows (predominantly hawthorn *Crataegus monogyna* and elder *Sambucus nigra*) with trees, broadleaved woodland, grassy verges and defunct hedgerows are also present.

5.2.2 The site is primarily used for grazing horses which maintains the sward at a low height.

5.3 Constraints

Ecological Designation

5.3.1 There are no designated sites within the survey area. However, some are present in the surrounding area (within 1 km of site). These include Denham Lock Wood and Fray's Farm Meadow (SSSI's). A local nature reserve, Denham Park, is also close by, as well as three BNS -, Alder Glade Nature Reserve (Herts & Middlesex Trust Nature Reserve), Near Willowbank and the River Colne.

Protected Species

5.3.2 There are a number of mature crack willow (*Salix fragilis*), ash (*Fraxinus excelsior*) and poplar (*Populus sp.*) trees, within the site. The cracks, peeling bark and ivy associated with these provide potential habitat for bats. All 17 British species of bat are protected by the Wildlife and Countryside Act (1981), the Countryside and Rights of Way Act (2000) and the Natural Habitats &c. Regulations (1994). The legislation also protects roosts, even if not currently in use since these are often used intermittently by bats. Together the various Acts protect bats against being killed, injured or disturbed, and their roosts and places used for rest or shelter

against damage or disturbance both intentionally or recklessly (CROW 2000). A full bat survey would establish whether there are significant impacts on bats.

- 5.3.3 The small area of broadleaved woodland and hedgerows within the site provides potential habitat suitable for nesting 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.
- 5.3.4 Reptiles may potentially inhabit longer areas of grass to the north of the site for basking. Grass snakes (*Natrix natrix*) may also make use the River Colne bordering one edge of the site for hunting, particularly as they have been recorded in Denham Court Country Park which is linked to the study site via the river. 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 these species, the latter two receive additional protection but have a restricted distribution..
- 5.3.5 Water Voles (*Arvicola terrestris*) may be present in the River Colne to the East of the site, as they have been recorded further up the river at Denham Court County Park. Any works conducted on site may have an impact on the river, and so a thorough riparian mammal survey should be conducted prior to works to assess the potential presence of water voles and otters. Water voles (*Arvicola terrestris*) receive legal protection through inclusion on Schedule 5 of the Wildlife and Countryside Act 1981. This protects the water vole's places of shelter or protection, but does not protect the water voles themselves (English Nature, 2001). Otters receive full protection under Schedule 5 of the Wildlife and Countryside Act 1981), and the Natural Habitats &c. Regulations (1994).

Other Interest

- 5.3.6 A small seasonally wet ditch passes through one field of improved grassland and contains species such as common reed (*Phragmites australis*), great willow herb (*Epilobium hirsutum*), gypsywort (*Lycopus europaeus*) and reed mace (*Typhus latifolia*). This may provide habitat for botanical species of interest and invertebrates and potentially be used by water voles as a dispersal corridor.

5.4 Evaluation

- 5.4.1 Site 1 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/P1/01, 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.

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Minerals Development Framework - Assessment of Potential Mineral Sites
 Site 1 - The Lea South

Worksheet 1 **Environment: Biodiversity - Plan Level**
Scheme / option: **Site 1, Lea South**

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/ Grassland	Semi-improved grassland	Local	Medium/Low	General decline	Low	Major negative	-1
Farmed landscape/ Grassland	Improved pasture	Local	Low		Low	Major negative	-1
Farmed landscape/ Woodland	Broadleaved woodland	Local	Low	General decline	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
River	Water voles	National	High – Protected Species	Major decline in last 30 years	High	Minor negative	-1
Farmed landscape/ Wet ditch	Water voles	National	High – Protected Species	Major decline in last 30 years	High	Minor negative	-1
Farmed landscape/ Mature trees	Bats	International	High – European protected species	General decline	High	Minor 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. 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 1 are as follows:

Recorded archaeology on the site

None

Significant archaeology recorded in the vicinity of the site

A concentration of rare undisturbed Upper Palaeolithic and Mesolithic sites of regional and national importance associated with contemporary peat deposits is known in the Colne Valley floodplain within 1km of this site. Immediately to the north, Bronze Age and Roman settlement, field systems and burials have been recorded at the Lea Quarry.

Preliminary assessment of the site's archaeological potential

High potential for Upper Palaeolithic/Mesolithic sites and environmental deposits, especially adjacent to the Colne, and for Bronze Age and Roman remains. Field evaluation essential.

Historic landscape sensitivity

A significant block of pre-18th century sinuous enclosure, a rare and declining HLC type across Buckinghamshire - this is one of the last and best survivals in the Colne Valley.

Overall sensitivity

Medium/High - due to archaeological potential and historic landscape sensitivity.

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

"[This] indicates a need for further study because there is significant risk of constraint. 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."

6.1.4 With regard to the latter point, it is noted that the mineral operator's expressed restoration preference for Site 1 is for restoration to a restored lake with additional landscaping. This would clearly not conform with the normal preference for the retention of the historic landscape pattern.

6.2 Listed Buildings and Conservation Areas

6.2.1 The site is not in, or close to, a Conservation Area. There are no listed buildings within 200m of the site, although one listed building lies only just beyond the 200m distance. Otherwise, the closest listed buildings are some 500m to the south-east of the site, close to the River Colne and the county boundary. Conservation Areas and Listed Buildings in the general area of the site are shown on Map 0004544/CM5/01.

6.3 Other cultural heritage features and designations

6.3.1 There are no other cultural heritage designations - such as registered parks and gardens, or registered battlefields - on or in the vicinity of the site.

6.3.2 Despite its identified archaeological potential (above), Site 1 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). 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/CM5/01.

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 1

Groundwater protection

7.2.1 Based on information taken from the Environment Agency's website in September 2006, Site 1 is outside any Source Protection Zone for groundwater, and there are no SPZs in the near vicinity.

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 eastern portion of Site 1 - around 75-80% 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/CM6/01.

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 1

- 8.2.1 The only mapped information available for this site shows the whole site as lying within ALC Grade 3, but with no distinction between any parts in Grade 3a (which would be 'best and most versatile land') and any in Grade 3b (which would not) see Map 0004544/CM8/01 . This mapped information appears to be very generalised, and its reliability for the present exercise should therefore not be regarded as particularly high.
- 8.2.2 When the site was considered at the 1991 Minerals Local Plan Inquiry, issues of agricultural land grading did not form part of the evidence either of the proponents of the site, or of its opponents. This is significant in the context of that inquiry, as agricultural land quality was a major factor in the Inspector's assessment of individual sites. The fact that it was not argued that this site consists of, or contains, BMV land may be regarded as strong, if not conclusive, evidence that this site is generally not of BMV quality.
- 8.2.3 A map contained within the County Council's evidence to the 1991 inquiry labelled the site as 'Grade 3 agricultural land', which is consistent with the position described in paragraph 8.2.1.

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 1

- 9.2.1 Site 1 is bounded to the north by the A40(T) and, to the northwest, by the westbound sliproad up to the roundabout at M40 Junction 1. It has no other direct road frontages, but immediately to the west is the A4020 (Oxford Road), which links Uxbridge (to the south-east) with the M40 junction. Although an A class road, the A4020 is not regarded as part of the SHN. The road network in the vicinity of the site is shown on map 0004544/CM1/01.
- 9.2.2 The Grand Union Canal lies between about 120m and 160m of the eastern boundary of the site. The canal is already in use for transporting aggregates from the existing quarry at The Lea (north of the A40) to a processing site at West Drayton in the London Borough of Hillingdon (approximately 8.5km by canal from the M40/canal crossing).
- 9.2.3 There are no railway lines in the vicinity of the site. The closest (apart from the Underground line which terminates at Uxbridge about 1.5km south-east of the site) is the Chiltern Railways line near Denham, approximately 2km north of the site.

9.3 Access options

- 9.3.1 Direct access for HGVs from the site to either the A40 or the A4020 would not be acceptable to the highway authority. This means that, in effect, the site is landlocked and could not be worked using road transport.
- 9.3.2 The operator with an interest in the site proposes to work it by taking material under the A40 by conveyor to the existing barge loading-point on to the Grand Union Canal, with the material then being transported by barge to West Drayton as at present. As with the present quarry at The Lea, necessary road access (for delivery and removal of plant, for car access for site employees, etc) would be by access road into The Lea quarry from the roundabout at Junction 1. From the point of view of the highway authority, this arrangement would be acceptable.
- 9.3.3 It is understood that at present the only tunnels under the A40 are the channels of the R. Colne and of the canal (which follow separate channels at this point). It is not clear whether the operator's proposal would be to make use of one of these tunnels, or whether it would be intended to create anew tunnel under the A40 somewhere along the northern boundary of Site 1. Again, in highway and transportation terms, either option would be acceptable.
- 9.3.4 However, there is a potential timing issue. The Lea Quarry to the north is estimated to have three to four years' of reserves remaining. Given present landbank position and the availability of the other Preferred Areas already in the MWLP, there are doubts as to whether this southern site could be worked as a direct continuation of the northern site. Given that the northern site is to be restored as lakes, it may be difficult for BCC to justify the retention of conveyors and other plant on the north side of the road (including the canal loading facility) on the basis that the site to the south might come forward at some unspecified time in the future.
- 9.3.5 An alternative arrangement for the land to the south would be to provide a new link to the canal on the south side of the A40, and to transport the material by canal to West Drayton from a new loading-point. However, this has two drawbacks:
- it would involve having to route the conveyor through the area of woodland on the southern tip of the island between the Colne and the canal, and to construct the new loading facility in this wooded area; and
 - it would not be possible to provide road access to the southern site, because of the unsuitability of the A40 or A4020 for a new access - the former because of the site's position so close to the Junction 1 roundabout (as well as the limitations on providing new accesses on to trunk roads), and the latter because of the unsuitability of the A4020 to take additional HGV traffic.
- 9.3.6 No other realistic option for securing access to and from this site has been identified.

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 1

10.2.1 Information supplied on behalf of the prospective mineral operator in 2003 indicates that this site is estimated to contain around 500,000 tonnes of recoverable sand and gravel. The total area of Site 1 is 13.4ha, and the prospective operator has referred to working an area of 12ha. This would leave 1.4ha, or about 10.4% of the total site area, to be left unworked as buffers to neighbouring properties, etc. These figures are used in the following assessment 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 estimate of 500,000 tonnes if and when detailed borehole data is supplied as part of any future application.

10.2.2 These figures indicate a gross yield from the site (i.e. yield per hectare of the total site) of around 37,300 tonnes/hectare, and a net yield (i.e. yield per workable hectare) of around 41,700t/ha.

10.2.3 Information submitted with a planning application for extraction from this site in 1988 stated that the average overburden thickness at the site was 1.2 metres, made up of 0.25m of topsoil, 0.65m of subsoil, and 0.3m of 'other overburden'.

10.2.4 In view of the assessment in Chapter 9 of the transportation issues at this site, it appears that, unless this site is worked as an extension of the quarry at The Lea (North), the mineral reserves in it would be sterilised because there is no acceptable method of accessing the site other than via the northern quarry. The amount of on-site infrastructure associated with the operation at The Lea (North) is limited, and other things being equal it may perhaps be possible to mothball it if there has to be a gap between the ending of operations at the northern site and the start of operations in the south. Whether such mothballing would be acceptable in environmental terms is another matter (see paragraph 9.3.4). With that in mind, it may be preferable for extraction from this site, if it is to be worked at all, to start immediately upon completion of extraction from the northern quarry. However, this would be contrary to the principles underlying the present MWLP, which seek to direct extraction to the three already-identified Preferred Areas.

10.2.5 To allow extraction from Site 1 to follow on directly from the completion of extraction in The Lea (North), permission may have to be given during the currency of the present MWLP and ahead of the preparation of the new Minerals Development Framework documents. In that event, a choice would have to be made between potentially sterilising 500,000 tonnes of sand and gravel, or allowing an exception to current Local Plan policies regarding the favoured locations for extraction. Consideration of the balance between these two issues is outside the scope of the present report.

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 use and generation
- 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 1 would be seen as one of the more favoured sites, since restoration to lakes - without landfilling - may be acceptable, in the event that mineral extraction were itself judged to be acceptable. It may be noted that the adjacent quarry at The Lea (North) is to be restored as lakes.

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. However, on the argument of the previous paragraph, this would not be an issue at Site 1.

- 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 1: Recreational Interests

- 12.2.1 Site 1 lies in the Colne Valley Regional Park. The key aims of the Park are concerned with the maintenance and enhancement of the landscape, the resistance of urbanisation, the conservation of nature conservation resources, and the provision of access and opportunities for countryside recreation. None of the general objectives of, or policies, for the Park provides any express discouragement to further mineral extraction. It is more important that site restoration achieves the Park’s key aims wherever possible.
- 12.2.2 There are no public rights of way within Site 1. Restoration following extraction might afford the opportunity to provide a footpath link between footpath DEN/24/1 to the south of the site and the River Colne, but such a path would have to cross land outside the site (and presumably in third-party ownership) before reaching the site boundary. Linking any such new

path to the remainder of the rights of way network would necessitate the crossing of the A40 if a link is to be achieved to footpath DEN/48/1 to the north, or the River Colne and the Grand Union Canal if a link is to be made to the canal towpath.

12.2.3 Allotment gardens lie immediately adjacent to the south-western boundary of the site and these are well maintained. A football pitch with a small club facility adjoins the site's southern tip.

12.3 Site 1: Sensitive employment uses

12.3.1 No employment uses have been identified close to Site 1 which might be sensitive to, and adversely affected by, mineral extraction from this site.

SUMMARY DETAILS FOR SITE 1

No. and name	1 - The Lea South
Site Area gross	13.4 ha
Site Area net	12 ha
Estimated Yield	500,000 t
Yield/ha gross	37,300
Yield/ha net	41,700
Overburden thickness	1.2 m
Possible duration of extraction	3 years
% of site within 100m of residential development	35%
% of site within 200m of residential development	70%
Number of residential properties within 100m	35
Number of residential properties within 200m	128
No. of residential properties within MWLP buffer zone	128
Other receptors within 200m	Hall, Pitch, Allotments
No. of houses on route to Strategic Highway Network	0
Overall landscape assessment score	-1.5
Overall ecological assessment score	-1
Archaeological sensitivity	Medium/High
Proximity of listed bldgs, Conservn Areas etc	LB >200m
In Source Protection Zone?	Outside
In flood risk zone?	75-80% Z2/3
Agricultural land grading	3 (gen)
Potential for access by means other than road	Canal
Public Rights of Way within site?	None
In Colne Valley Park?	Yes
In birdstrike consultation zone?	In 13km zone
In Air Quality Management Area?	Adjacent
Is restoration of site to land desirable?	No
Would minerals be sterilised if not worked imminently?	Maybe
Impacts on utilities	Yes within the site
Acceptability of access and haul route	Unacceptable
Renewable energy possible?	No
Proximity of other/recent workings	Adjacent – same operator