

**Buckinghamshire County
Council**

**Minerals Development
Framework**

**Assessment of Potential
Mineral Sites**

**Sites 9A and 9B
Lake End**

December 2006

Document control sheet

Client: Buckinghamshire County council
 Project: MDF - Assessment of potential mineral sites Job No: 4544 J
 Title: Sites 9A and 9B - Lake End

	Prepared by	Reviewed by	Approved by
ORIGINAL (First client draft)	NAME Keith Walmsley / Clare Heeley	NAME Keith Walmsley	NAME
DATE October 2006	SIGNATURE	SIGNATURE	SIGNATURE

FINAL	NAME Keith Walmsley / Clare Heeley	NAME Keith Walmsley	NAME Andrew Wooddisse
DATE 4th December 2006	SIGNATURE	SIGNATURE	SIGNATURE

This report, and information or advice which it contains, is provided by Jacobs solely for internal use and reliance by its Client in performance of Jacobs' duties and liabilities under its contract with the Client. Any advice, opinions, or recommendations within this report should be read and relied upon only in the context of the report as a whole. The advice and opinions in this report are based upon the information made available to Jacobs at the date of this report and on current UK standards, codes, technology and construction practices as at the date of this report. Following final delivery of this report to the Client, Jacobs will have no further obligations or duty to advise the Client on any matters, including development affecting the information or advice provided in this report. This report has been prepared by Jacobs in their professional capacity as Consulting Engineers. The contents of the report do not, in any way, purport to include any manner of legal advice or opinion. This report is prepared in accordance with the terms and conditions of Jacobs' contract with the Client. Regard should be had to those terms and conditions when considering and/or placing any reliance on this report. Should the Client wish to release this report to a Third Party for that party's reliance, Jacobs may, at its discretion, agree to such release provided that:

- (a) Jacobs' written agreement is obtained prior to such release, and
- (b) By release of the report to the Third Party, that Third Party does not acquire any rights, contractual or otherwise, whatsoever against Jacobs, and Jacobs accordingly assume no duties, liabilities or obligations to that Third Party, and
- (c) Jacobs accepts no responsibility for any loss or damage incurred by the Client or for any conflict of Jacobs' interests arising out of the Client's release of this report to the Third Party.

Contents

1 INTRODUCTION 3

2 SITE DESCRIPTION..... 7

3 POPULATION AND HEALTH 9

4 LANDSCAPE AND VISUAL 15

5 ECOLOGY 23

6 CULTURAL HERITAGE 29

7 WATER..... 33

8 SOILS 35

9 TRANSPORT AND ACCESS 37

10 MATERIAL ASSETS 39

11 OTHER ENVIRONMENTAL ISSUES 41

12 SOCIAL AND ECONOMIC ISSUES..... 43

LIST OF MAPS

0004544/LP/09	General Location Map
0004544/BF/09A	Buffer Zones
0004544/BF/09B	Buffer Zones
0004544/CM1/09	Constraints Map 1: Road and rail network
0004544/CM2/09	Constraints Map 2: Sensitive uses
0004544/CM3/09	Constraints Map 3: Public Rights of Way
0004544/CM4/09	Constraints Map 4: Utilities- no map for this site
0004544/CM5/09	Constraints Map 5: Historic Designations
0004544/CM6/09	Constraints Map 6 : Flood Zones and former Landfill sites
0004544/CM7/09	Constraints Map 7: Source Protection Zones
	Constraints Map 8: Agricultural Land Classification (general) and Contaminated Land
0004544/CM8/09	Land
0004544/LA/09	Landscape Analysis Plan
0004544/P1/09A	Phase 1 Habitat Survey
0004544/P1/09B	Phase 1 Habitat Survey

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 9 (Lake End, Dorney) is comprised of two areas, referred to as 9A (Lake End West) and 9B (Lake End East). The two areas are separated by open fields and by the small settlement of Lake End, which extends along the B3026 (Lake End Road). The sites are located 1.2km south of Burnham and 2.4km south east of Maidenhead. The northern boundaries of 9A and 9B are adjacent to the M4, with 9B located immediately south of junction 7 and 9A about 1km further west. Site 9A lies in an angle of the recently constructed Jubilee River, intended to provide flood relief to Maidenhead, Windsor and Eton, which flows adjacent to the site's southern and eastern boundaries.
- 2.2 The sites are relatively close to small residential areas located within Lake End and at Dorney 600m to the south. In addition, the settlement of Dorney Reach is 400m west of 9A. The Jubilee River separates Dorney and Dorney Reach from the site. The village of Bray is located 1.6km west of the site and the centre of Eton is approximately 4km (straight line distance) (both in the Royal Borough of Windsor & Maidenhead).
- 2.3 Both parts of the site border the M4, but otherwise neither site has any direct road frontage. The B3026 (Lake End Road) is approximately 300-400m east of Site 9A, and 150-200m west of Site 9B. To the north this road leads directly to the A4, just over 1km from the sites; to the south and east, it leads to Dorney, Eton Wick and Eton. The Paddington mainline railway is located 1.5km north of the site.
- 2.4 There is currently no mineral extraction in the vicinity of Site 9, although there has been much recent activity associated with the construction of the Jubilee River and the Eton College Rowing Course. A mineral processing plant remains operational at Monkey Island Lane in nearby Windsor & Maidenhead, although there are no remaining permitted reserves nearby. This plant lies south west of the site, at a distance of approximately 1.2km.
- 2.5 Sites 2 and 7 in the present assessment lie approximately 1.8km and 2.2km north of Site 9 respectively.

Use and character

- 2.6 The two parts of the site are mainly flat land, currently in use as agricultural pasture and arable land. A small stream runs close to 9A in the north east and the Jubilee River runs along the site boundaries to the south. Tree planting and hedgerows are along the boundaries of 9A and 9B with denser woodland located west of 9B outside the site boundary (For further details, see Chapter 4 of this report).

Area and potential mineral yield

- 2.7 Site 9A and Site 9B have a gross area of 8.2ha and 16.6ha respectively (as measured from GIS maps). The operator estimates that Site 9A and 9B could yield 1.48 million tonnes of sharp sand and gravel.

Planning history

- 2.8 Site 9B was put forward as Preferred Area 12 by Buckinghamshire County Council in 1990 in the Deposit Replacement Minerals Local Plan. At the 1991 Local Plan Inquiry the Inspector noted that a substantial part of this relatively small area is Grade 2 land, with a small proportion of the remainder being Grade 1. He considered that there was no need to use high-grade farmland to meet the required level of provision, and therefore he recommended that the site should not be designated as a Preferred Area. He also considered that the area should also not be included in any landbank or scheme until the questions of the M4 widening; the Flood Relief Scheme and the Eton Rowing Lake had been decided. In response to amenity objections, he considered that the existing level of noise at Lake End was very high and any additional noise arising from the working of PA12 (including associated traffic noise) would not generally have a significant effect on the amenities of the residents. However, he considered that the then-proposed access on to Lake End Road would be close to Lake End House and could lead to unacceptable noise problems for the occupiers of that property.
- 2.9 Site 9A has no known planning history.
- 2.10 Sites 9A and 9B were put forward by Maidenhead Aggregates to the 2005 Minerals Local Plan Inquiry, but - like other suggested 'omission sites' - they were not considered at that inquiry.

Operator's proposals

- 2.11 In their submissions in 2005, the agents for Maidenhead Aggregates proposed that this site would be worked in conjunction with other sites in the area, using a common conveyor link. With extraction working west to east, Site 9A and B would be the second and third areas to be worked, after Berkshire Preferred Area 10 (Manor Farm, Slough). The proposal was to realign the conveyor serving the Eton Rowing Course development, and to extend it eastwards to include a new crossing over the Jubilee River. The conveyor link would transport excavated material to the Monkey Island Plant further west. Restoration would include returning the site to agricultural use by backfilling the void with inert material. Additional landscaping would also be carried out. Access to the site for restoration would be gained from the B3026 (Lake End Road) with vehicles envisaged to approach from the north via the A4 and routeing in a northerly direction.
- 2.12 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 9 consists of two areas east (9B) and west (9A) of the small settlement of Lake End. The B3026 (Lake End Road) separates the areas and the M4 runs north of the site. The settlements of Dorney, Dorney Reach and Cippenham (a suburb of Slough) are located south, west and north east of the site. The Jubilee River runs south of the sites bordering Site 9A in the west and site 9B in the south. Approximately five residential properties at site 9A are within 200m of the site boundary, one of which is within 100m of the site; while some forty two residential properties are within 200m of site 9B, of which six are within 100m. The houses within the buffer zones are situated at Lake End for both areas, and additionally for site 9B they are located at Cippenham to the north east (see Maps 0004544/BF/09A and 0004544/BF/09B)
- 3.2.2 The great majority of the properties within 200m of Site 9B are separated from the site by the M4 motorway, as is one of the properties within 200m of Site 9A. This major road provides a buffering effect against mineral extraction, in accordance with SPG7. Only eleven properties are situated within 200m of, and on the same side of the M4 as, Site 9B - of which six are within 100m of the site. For Site 9A, the equivalent figures are 5 properties within 200m, of which one is within 100m.
- 3.2.4 Sensitive receptors close by include a school and an adjacent community facility located in Dorney Reach. These are outside the 200m and 100m buffer areas and are approximately 700m from the site boundary (see Map 0004544/CM2/09). There are also listed buildings and a conservation area within the 200m and 100m buffer areas for site 9B. The designated buildings are located west of the site and the conservation area is to the north but separated by the M4 (see Map 0004544/CM5/01).

Access and routeing

- 3.2.5 Road access to the sites would have to be via the B3026 (Lake End Road). This has been recently improved and would be acceptable for vehicular access for the both sites 9A and 9B. Vehicle routeing would be directed to the north of the sites along the B3026 to the A4. This route would pass up to ten to fifteen residential properties before reaching the SHN.

Duration of activities

- 3.2.6 The prospective mineral operator estimates that there are around 350,000 tonnes of extractable sand and gravel within Site 9A and 1.13 million tonnes at Site 9B. For site 9A this would take approximately two years and for site 9B this would take approximately six years, if the rate of extraction is 200,000 tonnes per year. Further time may be taken to complete restoration of the sites.

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 30% of Site 9A and 5% of 9B lie within 100m of residential properties. For Site 9A; 75% of the site, and for Site 9B; 30%.of the site, is within 200m of residential properties.

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 9 lies adjacent to the M4 and thus adjoins the designated AQMA. Specifically, Site 9B also lies adjacent to one of the 'hot spots' identified in the 2004 assessment, although the site itself does not include any properties that are forecast to be subject to air quality exceedences.
- 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 9 is outside the general 13km consultation zone for Heathrow, but lies in an area where consultation is required - 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 9.

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 9 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.
- 3.3.14 Some 30% of Site 9A and 5% of Site 9B lie within 100m of dwellings. In other words, extraction from 30% of site 9A and 5% of site 9B 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 one residential property at site 9A and six properties at site 9B 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.

3.5 Cumulative impacts

- 3.5.1 There is no current mineral extraction in the vicinity of Sites 9A and 9B, but the area has suffered prolonged disturbance in recent years associated with the construction of the Jubilee River and the Eton College Rowing Course. Mineral extraction associated with these two schemes has now been completed, and in principle there would be no cumulative environmental impacts resulting directly from extraction from either part of Site 9. However, extraction would extend the period of disturbance from mineral working in the area by a total of perhaps eight years.
- 3.5.2 If, as proposed by the prospective operator, mineral is removed from Sites 9A and 9B by an extension and diversion of the conveyor system previously used in association with the construction of the rowing course, the level of local disturbance would be minimised.
- 3.5.3 Road access to and from the sites, necessary for the delivery/removal of plant from the sites and for any filling of the sites after extraction, would reach the SHN on the same stretch of the A4 as the accesses to/from Sites 2 and 7. There may be a need to phase the release of these sites in order to avoid a simultaneous significant increase of HGV traffic on the relevant section of the A4.

3.6 Mitigation

- 3.6.1 The direct impacts on people of mineral extraction from Site 9 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 9 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/09)

- 4.1.1 Site 9A is broadly square in shape, comprising agricultural land between the M4 Motorway to the north, and the relatively new Jubilee flood relief channel to the south and west of the site. Eastern boundary merges with a public footpath running alongside the southern and western boundaries of the site, which in conjunction with other viewpoints enabled a landscape and visual appraisal of the whole potential preferred area.
- 4.1.2 Site 9B is broadly rectangular in shape, comprising agricultural land between the M4 Motorway to the north, and the relatively new Jubilee flood relief channel to the south. A number of public footpaths cross or border the site, which in conjunction with other viewpoints enabled a landscape and visual appraisal of the whole potential preferred area.

Policy / Context

- 4.1.3 Sites 9A and 9B are both located within Landscape Character Zone Z11 (LCZ 11) “Valley Floodplain” as identified by the Landscape Plan for Buckinghamshire published in 2001 by BCC and adopted by BCC as Supplementary Planning Guidance. The sites are consistent with the character of the eastern sector of LCZ11 where the floodplain is wide and gradients low. Site 9A lies within the BCC Area of Attractive Landscape (AAL) and site 9B is located on the boundary of the AAL.

4.2 Site Description – Site 9A (See Plan 0004544/LA/09)

- 4.2.1 Site 9A can be broadly divided into two parcels of land. The south eastern corner of the site is a small square shaped arable field defined by the imprint of a former hedgerow that seems to be mostly bramble. The other area encompasses the remainder of the site to the west and north and is divided by old post and wire fences.
- 4.2.2 The site boundaries are well defined. Site 9A abuts the M4 motorway, which is immediately to the north of the site set on low embankment. To the east Lake End Road rises onto an embankment to the bridge taking the road over the motorway. Near to the north east corner of the site is a stream that drains in a south easterly direction running into Roundmoor Ditch (a tributary of the River Thames). Adjacent to this watercourse but outside the site boundary are a number of mature trees.
- 4.2.3 To the south lies the extensive water feature of the Jubilee River. As part of the restoration project a number of bridges and public footpaths have been created along the Jubilee River. One of the many bridges is located to the southeast of the site over which the footpath that runs alongside site 9A connects with the footpath network on the south side of the Jubilee River.

4.2.4 A residential property is situated to the east of the site (outside but adjacent to the site boundary) and is very exposed to the site. The current site boundary does not accommodate any buffer zone around this property and this should be taken into account when consideration is given to future development of the site.

4.2.5 To the southeast of the site leading from Lake End Road is Ashford Lane (Track). This is the main access to the properties located on the north side of the track. The lane itself is quite narrow, with single line traffic and limited passing places. There are also a number of trees alongside the lane and on the day of inspection a number of dead elms were identified.

4.3 Site Description – Site 9B (See Plan 0004544/LA/09)

4.3.1 Site 9B can be broadly divided into two halves along an east to west axis. To the north is a single, large arable field. To the south the land is sub-divided by hedges into three parcels of grassland. The pastoral areas are low lying. There is a marked change in level between the arable and grassland areas. The arable field to the north, which is well drained, is about 0.6 – 1.0m above the level to the south. The change in level is marked by a track crossing the site on an east to west alignment.

4.3.2 The site boundaries are well defined. Site 9B abuts the M4 highway boundary at Junction 7, which immediately to the north of the site includes an embankment supporting the westbound exit and entry to the motorway. To the west, Lake End Road rises onto an embankment to the bridge taking the road over the motorway. To the south and east there is a network of streams and ditches which partly form the respective boundaries. These watercourses drain in a southeasterly direction running into Roundmoor Ditch (a tributary of the River Thames) that crosses the site on a west to east alignment. The watercourses are marked by mature willow trees dispersed along their length.

4.3.3 To the south lies the extensive water feature of the relatively new Jubilee flood relief channel. On the day of inspection it was noted that the southern-most field had been blanket sprayed with a herbicide as the entire area was found to contain dead vegetation and dieing moss. Immediately to the southeast of the site is a large mound, now landscaped, and which presumably contains excavated materials from the Jubilee River flood relief channel.

4.3.4 The land to the east of the site and outside the county boundary, is very marshy, un-managed and has reverted to reeds and willow scrub. Examination of notices revealed that this area contains the remains of a disused waste water treatment facility.

4.3.5 Immediately to the northwest corner of Site 9B are a group of houses and a collection of barns (the barns being Listed Buildings). On the day of the inspection it was noted that these barns were being renovated and the owner of house to the south of the barns had recently built a tennis court adjacent to the boundary of the site partially shielded by the construction of a bund that runs along the north side of the courts.

4.3.6 There is evidence of some form of pipework on the site, possibly for moving water from the water treatment site or pumping water from underground. There are various remnant pipes set in concrete foundations distributed along the central track. A construction team were found

at the eastern end of the track, building what seemed to be an access bridge for crossing the dried out ditch.

- 4.3.7 The hedges across the site generally are scrubby but include a high proportion of mature willow trees. A very large veteran oak tree grows in the hedge in the southwest corner.

4.4 Visual Relationship to the Surrounding Areas – Site 9A (See Plan 0004544/LA/09)

- 4.4.1 At a local level Site 9A is quite well contained visually by topography and boundary features along the northern, western and southern boundaries. From the footpath alongside the Jubilee River it is currently possible to see all parts of the site and the boundaries within the site. Newly planted trees and shrubs were noted between the Jubilee River footpath and the site boundary along the south west and west boundaries of the site, once these have established, the trees will contain views within the site.

- 4.4.2 Looking south and west from Site 9A the intermediate horizon is formed by the interlinking of mature trees and hedgerows interspersed with some properties. From within the site there are filtered views of properties situated on the northern and eastern edges of the settlements Dorney to the south of the site and Dorney Reach to the west of the site.

- 4.4.3 Views into the site are available from the cluster of properties located beyond the Jubilee River to the west and south of the site. For these properties mineral extraction will lead to a loss of visual amenity. Users of the footpath network will also experience a temporary loss of visual amenity. Travellers on the M4 westbound slip road will also be able to see into the site.

- 4.4.4 It is possible that vehicle access to the site may be from Lake End Road. The actual location of the access will determine the degree of visual intrusion experienced by owners of properties in this location.

4.5 Visual Relationship to the Surrounding Areas – Site 9B (See Plan 0004544/LA/09)

- 4.5.1 At a local level Site 9B is quite well contained visually by topography and boundary features along the western, northern and eastern boundaries but from the internal footpaths it is possible to see all parts and the boundaries.

- 4.5.2 To the south the land gently falls away to the River Thames. Looking south from Site 9B the intermediate horizon is formed by the interlinking of mature hedgerows with the raised ground levels associated with the Jubilee River construction to the south. This has been extensively landscaped and laid out with a network of leisure footpaths. There are long distance views beyond the Jubilee river to the tree-clad horizon formed by rising land on the south side of the Thames.

- 4.5.3 Views into the site are available from the cluster of properties to the west between the site and Lake End Road. Further south on Lake End Road there are properties on the west side of the road, which have an oblique outlook over the site. From these properties mineral extraction will lead to a loss of visual amenity in views to the east. Users of the footpath network will also experience a temporary loss of visual amenity and there will be views into the site from newly created network of paths and vantage points associated with the Jubilee River scheme.

Travellers on the M4 westbound slip road will also be able to see into the site and there are limited views from the bridge carrying Lake End Road over the M4.

- 4.5.4 It is probable that vehicle access to the site will be from Lake End Road. The actual location of the access will determine the degree of visual intrusion experienced by owners of properties in this location.

4.6 Evaluation

- 4.6.1 The landscape of Site 9A is unremarkable having lost its pattern and structure. It is degraded visually by the proximity of the motorway and associated infrastructure to the north, which leads to high noise levels and the visual distraction of moving traffic. The most important landscape element of the site is the trees located along the north eastern boundary of the site. These currently contribute to the partial screening of the site from M4 motorway. 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.

- 4.6.2 The necessary buffer zones required for protection of existing trees and the property adjacent to the eastern boundary should be taken into consideration for any future proposed development to the size of the site. It is also possible that access could be an issue due to the restriction imposed on the site by the nature of enclosing constraints.

- 4.6.3 The landscape of Site 9B although in a satisfactory condition, in part is unremarkable and is degraded visually in the north by the proximity of the motorway and associated infrastructure to the north, which leads to high noise levels and the visual distraction of moving traffic this is also coupled with the local loss of hedgerow cover and field pattern. The most important element of the existing landscape is the extent of mature tree cover provided by hedgerow trees in the south of the site both within the site and on the boundaries. Mineral working would not lead to the loss of either a significant landscape or of significant landscape features (with the exception of a veteran oak) either in a local or wider context.

- 4.6.4 The construction of an access road from Lake End Road will lead to local visual intrusion on this rural road.

4.7 Mitigation - Landscape

- 4.7.1 Sites 9A and 9B are located within an area of recent substantial disturbance and landscape change due to the construction of the MWEFAS. This period of disturbance is at an end and hence working of the site will serve to extend the period of local disturbance.

- 4.7.2 Mitigation would be required during working to reduce visual impacts. This could be achieved by a combination of retention of boundary vegetation and the provision of screen bunds and fencing.

- 4.7.3 Extraction phasing and programming should be focused on working minerals in a direction away from the adjacent housing in the east (9A) and west (9B). Careful consideration will need to be given to access arrangements for the site.

4.7.4 The provision of a processing plant would lead to additional visual impact and the type of plant and its location within an essentially flat and open landscape will require careful consideration however, it is possible that mineral won from site might be processed off site transported by road or by conveyor which would reduce overall impacts.

4.8 Conclusion

4.8.1 The original after use proposal was a landscaped lake for nature conservation or recreational purposes.

4.8.2 The proposal for a lake should be reviewed in the light of current recommendations from the Environment Agency. Such proposals may include the re-routing of Roundmoor Brook prior to mineral development, and guidelines for the most appropriate time of year to conduct these mitigation operations.

4.8.3 The location between the M4 and the disturbed landscapes associated with the MWEFAS nearby to the south offer an opportunity for a new landscape and after use to be created that would assist in integration of both features into the wider landscape.

4.8.4 To achieve this objective in the south restoration could be predominantly to water and integrated with the MWEFAS scheme. In the north, where landscape quality is compromised by the presence of the traffic on the motorway, the elevated slip road, the bridge structures and the associated motorway lighting columns the most suitable form of restoration would be to woodland use to provide a buffer between the motorway and the recreational use of the MWEFAS scheme.

4.8.5 The present boundaries remain valid except for the issue of encroachment of garden use affecting potential access to the sites from Lake End Road. Minor amendment to the boundary may be required at Lake End to provide buffering to residential uses.

4.9 Townscape

4.9.1 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.

Landscape and Visual Site 9A – Lake End West

Factor	Description	Scale (At which Attribute Matters)	Rarity	Importance	Magnitude of Impact	Assessment of Impact
					Lake End West	Lake End West
Features – land cover	Grassland , arable, woodland	Two arable fields	Locally common	Low	Slight Adverse	-1
Features - boundary	Hedges, trees, water bodies	Poor quality. Fencing and planting associated with the flood alleviation scheme	Locally common	Low	Slight Adverse	-1
Features - internal	Trees, woodland	Poor quality post and barbed wire	Locally common	Low	Slight Adverse	-1
Character	Local distinctiveness	Area degraded but with new planting to west and south	Locally common	Low	Slight Adverse	-1
Visual effect - Residential	Visible from residential properties	Residential property to north east of the site	Single property issue	Low	Slight Adverse	-1
Visual effect – ROW and public open space	Visible from adjoining/affected ROW and public open space	New network of paths and POS associated with the Jubilee River to south and west. Glimpse into site from M4 motorway	Area recently opened up for recreational use. Locally important	Low	Slight Adverse	-1
Tranquillity	Noise and visual disturbance	Locally important M4 background noise	Increasingly scarce	Low	Slight Adverse	-1
Cultural – landscape designations	Structure/Local Plans	AAL designation	County/District designation	Medium	Moderate Adverse	-2
Overall Score					Slight Adverse	- 1

Buckinghamshire County Council
Minerals Development Framework - Assessment of Potential Mineral Sites
Site 9 – Lake End, Dorney

Landscape and Visual Site 9B – Lake End East

Factor	Description	Scale (At which Attribute Matters)	Rarity	Importance	Magnitude of Impact	Assessment of Impact
					Lake End East	Lake End East
Features – land cover	Grassland , arable, woodland	Mixed use, arable pastoral and fallow	Locally common	Low	Slight Adverse	-1
Features - boundary	Hedges, trees, water bodies	Hedgerows, scrub and new planting to highway boundary	Locally common	Low	Slight Adverse	-1
Features - internal	Trees, woodland	Hedgerow and mature trees	Locally common	Low	Slight Adverse	-1
Character	Local distinctiveness	Degraded to the north. Rank grassland to south	Locally common	Low	Slight Adverse	-1
Visual effect - Residential	Visible from residential properties	Small group of houses to north west at Lake End road.	View to north west corner of site. Local issue	Medium	Moderate Adverse	-2
Visual effect – ROW and public open space	Visible from adjoining/affected ROW and public open space	Views from footpath network. Site overlooked from various vantage points	Site crossed by two ROWs. Overlooked by traffic on slip road to M4. New ROWs to south associated with MWEFAS	High	Large Adverse	-3
Tranquillity	Noise and visual disturbance	Locally important M4 background noise	Increasingly scarce	Low	Slight Adverse	-1
Cultural – landscape designations	Structure/Local Plans	Borders onto AAL County designation	County/District designation	Medium	Moderate adverse	-2
Overall Score					Slight – moderate adverse	- 1.5

5 ECOLOGY

5.1 Introduction

- 5.1.1 Site 9 is subdivided into two smaller sites. Site 9 A is the larger of the two. It is bordered by the M4 to the north, and fields on all other sides. Two public footpaths run through the site.
- 5.1.2 Site 9B is located very close to the Jubilee River which flows past its southern and western boundaries. It can be accessed by public footpath which leads to the south east corner. Permission by the landowners was granted for the purpose of the survey.

5.2 Site Description

- 5.2.1 Site 9A is composed of arable land (wheat fields) and improved grassland. Within one field of improved grassland an area of marshy grassland exists, and within another a damp wetland area.
- 5.2.2 The most southern field of improved grassland is dominated by bristly ox tongue *Picris echioides*, the other two fields by grasses, nettles *Urtica dioica* and hogweed *Heracleum sphondylium*. The damp wetland area contains goat willow *Salix caprea*, common reed *Phragmites australis*, great willowherb *Epilobium hirsutum*, and hard rush *Juncus inflexus*. The marshy grassland contains colt's foot *Tussilago farfara*, hard rush, and great willowherb.
- 5.2.3 Hedgerows (elder *Sambucus nigra*, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*) border almost the entire site with the exception of a small stretch of fence. Most hedgerows contain trees (elm *Ulmus sp*, hazel *Corylus avellana*, oak *Quercus robur*, ash *Fraxinus excelsior*) and some are species rich.
- 5.2.4 A small depression in the ground was identified as having potential to form a small seasonal pond during wetter periods of weather.
- 5.2.5 Site 9B is subdivided into two fields, one arable and one of improved grassland (soft brome *Bromus hordeaceus*, Yorkshire fog *Holcus lanatus*, and cocks foot *Dactylis glomerata*). Like site 9A it is almost entirely bordered by hedgerow (hawthorn *C. monogyna*, dogwood *Cornus sanguinea*), although much of the hedgerows are newly planted. Some hedgerows contain trees (alder *Alnus sp* and ash *Fraxinus excelsior*). A line of cypress trees form part of the northern boundary. A defunct hedgerow and fence divide the two fields.

5.3 Constraints

Ecological Designation

- 5.3.1 There are no statutory or non-statutory sites within the survey area. Designated sites within 1km of the study areas include Trumper's field (CWS), and two biological notification sites St James churchyard and Dorney Common.

Protected Species

- 5.3.2 There is potential for reptiles to occupy both sites as both have areas of long grassland. 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.
- 5.3.3 The 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.
- 5.3.4 The potential seasonal pond in Site 9A could support Great Crested Newts. Great Crested Newts are offered full protection by section 9 of the Wildlife and Countryside Act (1981). This prohibits killing, injuring, taking newts, and disturbing or destroying places of shelter or protection. A full survey should be undertaken by a suitably qualified ecologist if the pond fills with water to establish their presence or absence.
- 5.3.5 A mature English oak in Site 9A was assessed as having potential to support a bat roost but this was assessed as low. 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 as these are often reused by bats year after year. Taken together bats are protected 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.

Other Interest

- 5.3.6 Both sites are within a key water vole area. This is particularly relevant to site 9B which is located adjacent to the Jubilee River. Potential impacts will require assessment and riparian mammal survey to inform the decision making process.
- 5.3.7 Song thrushes (*Turdus philomelos*) were present on site. This species is a Species of Principal Importance for the Conservation of Biodiversity (SPIs) in England under Section 74 of the Countryside and Rights of Way Act 2000. Green Woodpecker (*Picus viridis*) is a bird species of medium conservation concern with 'Amber List' status (Gregory *et al*, 2002) which was also observed on site.

5.4 Evaluation

- 5.4.1 Site 9 does not include any statutory or non-statutory sites but has potential for protected species. Biodiversity and ecological interest appears to be generally low within the site

although the presence of marshy grassland and a damp wetland area does support some interest. The various habitats present are commonplace, but the proximity of the Jubilee River does provide additional interest and value.

- 5.4.2 Maps showing the results of the Phase 1 Habitat Survey are included as Map 0004544/P1/09A and 0004544/P1/09B, along with copies of the target notes covering the two areas of 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 9 – Lake End, Dorney

Worksheet 1 Environment: Biodiversity - Plan Level
Scheme / option: Site 9, Lake End

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	Marsh	Local	Low		Low	Major negative	-1
Farmed landscape/ Wetland	Wetland	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/ Ponds	Great Crested Newts	International	High – European protected species	Major decline	High	Minor negative	-1
Farmed landscape/ adjacent river	Water voles	National	High – Protected Species	Major decline in last 30 years	High	Minor negative	-1

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/ 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. 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 9 are as follows:

Recorded archaeology on the site

Site 9A Lake End West: None

Site 9B Lake End East: Saxon and medieval occupation extending from adjacent excavation area along Jubilee River (CAS 2114).

Significant archaeology recorded in the vicinity of the site

Site 9A Lake End West: Burnham Abbey (CAS 0522) to the north. Cropmark enclosures and ring ditch (CAS 2179) 200m to the south. Cropmark ring ditch (CAS 6255). Seven Listed Buildings at Lake End. Excavations along the Jubilee River at Lake End Road and Lots Hole have revealed extensive prehistoric, Roman, Saxon and medieval occupation. Further to the south west is Dorney Rowing Lake with its rich diversity of prehistoric remains.

Site 9B Lake End East: The site lies in the Thames floodplain, an area rich in archaeological remains of prehistoric and later date. Prehistoric and Roman field systems are recorded immediately to the south of the site, a Neolithic "causeway enclosure" 500m to the southwest, Burnham Abbey 750m to the north east and Dorney Rowing Lake with a rich diversity of prehistoric remains 1km to the south.

Preliminary assessment of the site's archaeological potential

Site 9A Lake End West: An area of high archaeological potential including the possibility of waterlogged deposits in former Thames channels. Would require field evaluation.

Site 9B Lake End East: An area of high archaeological potential. Partly investigated for a proposed gravel storage area suggesting that significant archaeology is likely to be largely restricted to the north and west of the site. Further evaluation required.

Historic landscape sensitivity

Site 9A Lake End West: Prairie field with 18th century or earlier irregular enclosure, the latter is a rapidly declining historic landscape type of medium sensitivity.

Site 9B Lake End East: Modern enclosure/prairie field. Low sensitivity.

Overall sensitivity

Site 9A Lake End West: Medium- due to historic landscape value and archaeological potential, assumes archaeological mitigation and retention/restoration of historic fields.

Site 9B Lake End East: Medium - due to archaeological interest.

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 a Conservation Area; however a CA exists north of site 9B surrounding the remains of Burnham Abbey. At its closest, this CA is just over 100m from the north-western tip of Site 9B, although the two are separated by the M4 motorway. There are three listed buildings within 100m of the site, and four within the 200m boundary. These are located between the two site areas at Lake End and also south of the sites within the settlement of Dorney. Other listed buildings are situated at and surrounding the Burnham Abbey site, one building here is situated within the 200m boundary and the others just outside this boundary. Conservation Areas and Listed Buildings in the general area of the site are shown on Map 0004544/CM5/09.

6.3 Other cultural heritage features and designations

6.3.1 There is a registered garden located at Huntercombe Manor approximately 500m from the boundary of site 9B. There are no other cultural heritage designations - such as registered battlefields - on or in the vicinity of the site.

6.3.2 All of Site 9A and 25% of Site 9B are 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). This highlights this site's archaeological potential and supports the evidence presented in Section 6.1 above. 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/CM5/09.

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 9

Groundwater protection

7.2.1 Based on information taken from the Environment Agency's website in September 2006, approximately 40% of Site 9A (Lake End West) is within a SPZ Inner Zone and 60% of the site is within a SPZ Outer Zone. For Site 9B (Lake End East), approximately 50% of the site is within a SPZ Outer Zone, 30% of the site is within a Total Catchment area and the rest of the site lies outside any Source Protection Zone for groundwater.

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 majority of Site 9A – approximately 85% of the total site area – lies within Flood Zone 2 or 3. For Site 9B approximately 50% of the total site area 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/CM6/09.

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 9

8.2.1 The best mapped information available for Sites 9A and 9B is that submitted to the County Council in 2005 on behalf of the prospective mineral operator, as part of his submission seeking the inclusion of this site in the new MWLP. This survey, undertaken by consultants CPM in 2004, showed that

- Site 9A is split approximately 55:45 between Grade 2 land (in the western half of the site, together with a small area in the eastern half) and Grade 3a land (the majority of the eastern half of the site); and
- Site 9B is split approximately 60:40 between Grade 2 land (across the northern part of the site) and Grade 3b (in the southern and south-western part of the site).

8.2.2 Because it is the result of a recent and site-specific survey, this classification is considered to be more reliable than the more general classification shown in the County Council's GIS data (Map 0004544/CM8/09). This shows Site 9A and most of 9B to be Grade 2, with the north-westernmost part of 9B being Grade 1.

8.2.3 It has not been confirmed that the detailed methodology used in the 2004 surveys (which takes account of the revised guidelines and criteria for ALC issued by MAFF in 1988) is in accordance with current DEFRA good practice. However, there is absolutely no reason to suggest that it is not.

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 9

- 9.2.1 Both sites 9A and 9B lie immediately adjacent to, and south of, the M4 motorway. Site 9B is immediately south of motorway Junction 7 (Slough West), and Site 9A is approximately 1km further west. Lake End Road runs north-south between Sites 9A and 9B, linking the western part of Slough (to the north) with Dorney, Eton Wick and Eton (to the south and south-east).
- 9.2.2 Lake End Road is a classified road (B3026). It crosses the M4 on a bridge approximately 200m west of the north-westernmost point of Site 9B, and has a roundabout junction with the A4, at a point in Slough Borough, just over 1km to the north of the motorway. The A4 in Slough, as in Buckinghamshire, is regarded as part of the primary road network. To the south, Lake End Road crosses the Jubilee River on a new bridge constructed in association with the construction of the river. Lake End Road has been improved in recent years in connection with the construction of the Jubilee River and the nearby Eton Rowing Course, and although there is a slight pinch-point along this road at The Pineapple Public House, it is considered suitable in principle for use by mineral traffic.

9.2.3 The road network in the vicinity of the site is shown on Map 0004544/CM1/09.

9.2.4 The artificial Jubilee River lies immediately west of Site 9A and immediately south of Site 9B, but this river has not been designed for use by freight traffic. There are no other waterways or railway lines nearby which might be suitable for transporting mineral from this site. The River Thames is about 1km west of Site 9A, while the nearest railway line is the main Paddington line at Burnham, just over 1.5km north of Site 9A and 9B.

9.3 Access options

9.3.1 The sites could be accessed by road using Lake End Road. New accesses would be needed into both Sites 9A and 9B, but in highway terms these are considered to be feasible.

9.3.2 The operator who wishes to work these sites has proposed an alternative arrangement, whereby mineral from both sites would be taken by conveyor to an existing processing plant at Monkey Island Lane, Bray (in Windsor & Maidenhead), some 2.5km from Site 9A and 3.5km from Site 9B. This arrangement would make use of the new footbridge over the Thames, incorporating a mineral conveyor, which was constructed in the 1990s to provide conveyor access for the removal of aggregates from the Eton Rowing Course. This proposal forms part of a larger scheme to provide conveyor links between Monkey Island Lane and various other potential extraction sites in Windsor & Maidenhead and in Slough, including a site (already designated as a Preferred Area in Berkshire's Minerals Local Plan) at Manor Farm in Slough immediately east of Site 9B.

9.3.3 In transport terms, this method of removal of material from Sites 9A and 9B would be acceptable, and would meet objectives to minimise the use of roads for the transportation of minerals. If either or both sites were to be filled with inert materials as part of their restoration, it would be acceptable for the filling material to be delivered to the sites via Lake End Road.

9.3.4 There is no 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 9

10.2.1 Information supplied on behalf of the prospective mineral operator in 2005 indicates that Site 9A is estimated to contain around 350,000 tonnes of recoverable sand and gravel, and Site 9B 1,130,000 tonnes. The total area of Sites 9A and 9B respectively are 8.2ha and 16.6ha. No figures are available of the likely net working areas, but based on a notional figure of 20% of the sites being required as buffers to neighbouring properties, etc, the net working areas might be 6.6ha (9A) and 13.3ha (9B). 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 estimates of the sites' yields, 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 sites (i.e. yield per hectare of the total sites) of around 42,700 tonnes/hectare for Site 9A and 68,100t/ha for Site 9B, and a net yield (i.e. yield per workable hectare) of around 53,000t/ha and 85,000t/ha respectively. The latter is a high figure in the Buckinghamshire context.

10.2.3 No information is available regarding the thickness of the overburden at either site.

10.2.4 Although the prospective operator proposes to work these sites in sequence with certain other sites in the vicinity, this is not the only way in which the sites might acceptable be worked. Between them, they are considered to be large enough to be worked as an independent unit if and when they were judged to be acceptable for extraction - although on its own Site 9A might be marginal in this respect, and would be unlikely to justify the establishment of on-site processing plant. Overall it is concluded that no mineral sterilisation issue arises in assessing the suitability of Site 9 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 9A 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. Site 9B, however, would be one of the less favoured sites as 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. However, on the argument of the previous paragraph, this would not be an issue at Site 9A.

- 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 9: Recreational Interests

- 12.2.1 There are no public rights of way within Site 9A although bridleway DOR/5/(BW)/1 passes close to the south eastern corner of the site. Within Site 9B, footpaths BUH/64/1 and BUH/65/2 cross the site from west to east, linking to Lake End Road to the west, and (via a footbridge over the motorway) to Cippenham to the north.

12.3 Site 9: Sensitive employment uses

- 12.3.1 No employment uses have been identified close to Site 9 which might be sensitive to, and adversely affected by, mineral extraction from this site.

SUMMARY DETAILS FOR SITE 9

No. and name	9A - Lake End West	9B - Lake End East
Site Area gross	8.2 ha	16.6 ha
Site Area net	6.6 ha ?	13.3ha ?
Estimated Yield	350,000 t	1.13 mt
Yield/ha gross	42,700	68,100
Yield/ha net	53,000 ?	85,000 ?
Overburden thickness	n/a	n/a
Possible duration of extraction	2 years	6 years
% of site within 100m of residential development	30%	5%
% of site within 200m of residential development	75%	30%
Number of residential properties within 100m	1	6
Number of residential properties within 200m	5	42
No. of residential properties within MWLP buffer zone	5	11
Other receptors within 200m	None	None
No. of houses on route to Strategic Highway Network	10-15	10-15
Overall landscape assessment score	-1	-1.5
Overall ecological assessment score	-1	-1
Archaeological sensitivity	Medium	Medium
Proximity of listed bldgs, Conservn Areas etc	None	CALB 200m
In Source Protection Zone?	40:60 IZ/OZ	50:30 OZ/TC
In flood risk zone?	85% Z2-3	50% Z2-3
Agricultural land grading	2/3a (55:45)	2/3b (60:40)
Potential for access by means other than road	Conveyor	Conveyor
Public Rights of Way within site?	No, but near	Yes (2)
In Colne Valley Park?	No	No
In birdstrike consultation zone?	No issue	No issue
In Air Quality Management Area?	Adjacent	Adjacent
Is restoration of site to land desirable?	No	Yea
Would minerals be sterilised if not worked imminently?	No	No
Impacts on utilities	None	None
Acceptability of access and haul route	Acceptable <1km from SHN	Acceptable <1km from SHN
Renewable energy possible?	Yes	Yes
Proximity of other/recent workings	Adjacent – same operator	Adjacent – same operator