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Hertfordshire Minerals Local Plan Site Selection Report

Final Report (Updated)
Prepared by LUC and Cuesta Consulting Ltd
November 2017

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Contents

Tables

Figures

Glossary of Abbreviations

	Definition
AONB	Area of Outstanding Natural Beauty
BGS	British Geological Survey
BMV	Best and Most Versatile
HCC	Hertfordshire County Council
HRA	Habitats Regulations Assessment
IMAU	Industrial Minerals Assessment Unit
LAA	Local Aggregates Assessment
NNR	National Nature Reserve
NPPF	National Planning Policy Framework
MCA	Minerals Consultation Area
MLP	Minerals Local Plan
MPA	Minerals Planning Authority
MSA	Minerals Safeguarding Area
PPG	Planning Practice Guidance
SA	Sustainability Appraisal
SAC	Special Area of Conservation
SPA	Special Protection Area
SPD	Supplementary Planning Document
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest

1 Introduction

Background

1.1 Hertfordshire County Council (HCC), as the Minerals Planning Authority, is reviewing the existing Minerals Local Plan (adopted in 2007) to ensure that it is up-to-date and provides a reliable plan for at least a further 15 year plan period, plus an additional seven years for sand and gravel[1]. The content of a Minerals Local Plan must meet the requirements of the National Planning Policy Framework (NPPF) and have regard to the content of the online national Planning Policy Guidance (PPG); both of which are discussed further in **Section 2** below. One of the key aspects of a Minerals Local Plan is to plan for a steady and adequate supply of aggregates by identifying specific sites, preferred areas and/or areas of search.

1.2 LUC and Cuesta Consulting were appointed in December 2014 by HCC to review the Council's previous mineral site selection methodology (developed in 2009), amend and update it where required, and then apply the methodology to identify suitable sites for the extraction of **sand and gravel** and **brick clay** in the county. In addition, a methodology for the identification of Minerals Safeguarding Areas (MSAs) and Minerals Consultation Areas (MCAs), and its subsequent implementation was required.

1.3 The conclusions and recommendations of this report will inform the emerging Minerals Local Plan (MLP), forming a key piece of its evidence base.

Report Structure

1.4 This report includes a thorough review of national policy and guidance, together with national and local information which has informed the analysis and approach undertaken. It was critical that the site selection methodology meets the statutory local plan requirements: to be positively prepared, justified, effective and consistent with national policy and guidance.

1.5 The remainder of this report is structured as follows:

- **Chapter 2**: National and local policy requirements relating to selecting sites for inclusion in MLPs and identifying MSAs and MCAs.
- **Chapter 3**: Describes the site selection methodology for sand and gravel and brick clay.
- **Chapter 4**: Describes the approach to brick clay.
- **Chapter 5**: Describes the methodology for defining MSAs and MCAs and presents the proposed MSAs/MCAs.
- **Chapter 6**: Sets out the findings of the sand and gravel and brick clay site and preferred area assessments.
- **Chapter 7**: Study conclusions.

1.6 In addition, the Report contains two appendices:

- **Appendix 1**: Completed Site Assessment Proforma.
- **Appendix 2**: Hertfordshire Highways Department assessment of site options.

[1] This is to ensure that the required landbank for sand and gravel can be met. As such, the total period for sand and gravel is 22 years.

2 Policy Requirements

National Policy and Guidance

2.1 Minerals are essential to support economic growth and our quality of life. Paragraph 142 of the NPPF[2] states that it is important that there is a sufficient supply of material to provide the infrastructure, buildings, energy and goods that the country needs, and emphasises that minerals can only be worked where they are found and it is important to make best use of them to secure their long-term conservation. This highlights the importance of the need to facilitate a steady and adequate supply of minerals, as required by the NPPF. Therefore a positively prepared, justified, effective approach to the site selection methodology and site selection study, which is consistent with national policy and guidance, is essential.

Site Selection for Aggregates

2.2 The NPPF states in paragraph 145 that Minerals Planning Authorities (MPAs) should plan for a steady and adequate supply of aggregates by:

- *"…making provision for the land-won and other elements of their Local Aggregate Assessment in their mineral plans taking account of the advice of the Aggregate Working Parties and the National Aggregate Co-ordinating Group as appropriate. Such provision should take the form of specific sites, preferred areas and/or areas of search and locational criteria as appropriate;*
- *…making provision for the maintenance of landbanks of at least 7 years for sand and gravel and at least 10 years for crushed rock, whilst ensuring that the capacity of operations to supply a wide range of materials is not compromised…;"*

2.3 The online National Planning Practice Guidance[3] (PPG) elaborates on the policies included in the NPPF, stating in paragraph 008 that MPAs should *"plan for the steady and adequate supply of minerals in one or more of the following ways (in order of priority):*

- *designating Specific Sites – where viable resources are known to exist, landowners are supportive of minerals development and the proposal is likely to be acceptable in planning terms. Such sites may also include essential operations associated with mineral extraction;*
- *designating Preferred Areas, which are areas of known resources where planning permission might reasonably be anticipated. Such areas may also include essential operations associated with mineral extraction; and/or*
- *designating Areas of Search – areas where knowledge of mineral resources may be less certain but within which planning permission may be granted, particularly if there is a potential shortfall in supply".*

2.4 In exceptional circumstances, such as where a MPA is largely made up of designated areas protection areas such as Areas of Outstanding Natural Beauty (AONBs), it may be appropriate to rely largely on policies which set out the general conditions against which applications will be assessed. However, it should be noted that HCC is not largely made up of designated sites/areas, and the main resource in the County, sand and gravel, is located outside the Chilterns AONB.

2.5 It is essential that when undertaking site selection that accurate and high quality data is used, as paragraph 009 of the PPG states that the better the quality of data available to MPAs, the better the prospect of a site being designated as a Specific Site. Designating Specific Sites in minerals plans provides the necessary certainty on when and where development may take place.

2.6 It must be borne in mind that under certain circumstances it may be preferable to focus on extensions to existing sites rather than plan for new sites. For example, it is likely that due to

[2] *National Planning Policy Framework*. CLG, 2012.
[3] Retrieved on 25th July 2016 from: http://planningguidance.planningportal.gov.uk/

plant and infrastructure already being in place, an extension to an existing mineral site may, in some cases, be able to work resources that would not otherwise be commercially viable, if worked in isolation as a new site. However, paragraph 010 of the PPG states that the suitability of each proposed site, whether an extension to an existing site or a new site, must be considered on its individual merits, taking into account issues such as:

- need for the specific mineral;
- economic considerations (such as being able to continue to extract the resource, retaining jobs, being able to utilise existing plant and other infrastructure);
- positive and negative environmental impacts (including the feasibility of a strategic approach to restoration; for example the use of ecosystem services and landscape-scale restoration opportunities to guide the location of future minerals extraction such that it optimises the generation of long-term environmental benefits); and
- the cumulative impact of proposals in an area.

Industrial Minerals

2.7 Industrial minerals are accounted for separately in the NPPF and PPG due to differences in the ways in which they are worked, the wide range of uses they have and the range of markets they supply. As a result, paragraph 086 of the PPG states that MPAs should recognise that there are marked differences in geology, physical and chemical properties, markets and supply and demand between different industrial minerals, which can have different implications for their extraction. The differences of particular relevance to brick clay, and which therefore need to be taken account of in the site selection methodology, include:

- geology influencing the size of the mineral resource, how it may be extracted and the amount of mineral waste generated;
- the fact that markets are based on the consistent physical properties of the products (bricks, in this case); and
- the potential for the quality of clay extracted from a single site varying considerably within the site. This may require multiple extraction faces within one quarry and blending to produce a consistent end-product.

Environmental Considerations

2.8 Environmental impacts from both aggregate and industrial mineral extraction require assessment. Significant environmental impacts are best addressed through consideration of an Environmental Impact Assessment which accompanies planning applications for most new mineral workings. However, when undertaking site selection as part of minerals plan preparation, MPAs need to consider planning and environmental constraints and site specific details for similar issues, albeit it in a different level of detail. Paragraph 013 of the PPG states that the principal issues that MPAs should address, bearing in mind that not all issues will be relevant at every site to the same degree, and not all issues can be addressed at the plan preparation stage, include:

- noise associated with the operation
- dust;
- air quality;
- lighting;
- visual impact on the local and wider landscape;
- landscape character;
- archaeological and heritage features;
- traffic;
- risk of contamination to land;
- soil resources;

- geological structure;
- impact on best and most versatile agricultural land;
- blast vibration;
- flood risk;
- land stability/subsidence;
- internationally, nationally or locally designated wildlife sites, protected habitats and species, and ecological networks;
- impacts on nationally protected landscapes (National Parks, the Broads and Areas of Outstanding Natural Beauty);
- nationally protected geological and geomorphological sites and features;
- site restoration and aftercare;
- surface and, in some cases, ground water issues; and
- water abstraction.

2.9 Not all of the issues listed above will be relevant to all sites, and not all of them will be able to be addressed properly at the site selection stage, but this list provides a useful starting point for issues to be considered.

2.10 Policy such as paragraph 90 of the NPPF also needs to be taken into account when considering planning and environmental constraints. Paragraph 90 outlines how mineral extraction is not an inappropriate form of development in the Green Belt provided it preserves the openness of the Green Belt and does not conflict with the purposes of including land in Green Belt. The purposes of Green Belt are:

- to check the unrestricted sprawl of large built-up areas;
- to prevent neighbouring towns merging into one another;
- to assist in safeguarding the countryside from encroachment;
- to preserve the setting and special character of historic towns; and
- to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

Mineral Safeguarding

2.11 Paragraph 143 of the NPPF sets out the requirement for MPAs to ensure that their Local Plans define Mineral Safeguarding Areas (MSAs) and adopt appropriate policies in order that known locations of specific minerals resources are not needlessly sterilised by non-mineral development, whilst not creating a presumption that resources defined will be worked. Mineral Consultation Areas (MCAs) should then be defined based on the MSAs. In addition to mineral resources, Local Plans should safeguard existing, planned and potential facilities for the bulk transport of minerals by rail, sea and inland waterways; and set out policies to encourage the prior extraction of minerals, where practicable and environmentally feasible, if it is necessary for non-mineral development to take place. In the case of Hertfordshire, this means that existing and disused railheads, such as the five rail depots which transport mineral throughout the county and beyond, should be safeguarded.

2.12 The PPG and the British Geological Survey report 'Mineral safeguarding in England: good practice advice'[4] provides guidance on minerals safeguarding, including the steps MPAs should take to safeguard mineral resources, and what the role is of the district council, as the local planning authority, in safeguarding minerals.

2.13 The PPG states that MPAs should adopt a systematic approach for safeguarding mineral resources, which:

[4] British Geological Survey (BGS) report 'Mineral safeguarding in England: good practice advice' (Wrighton et. al., 2011)

- uses the best available information on the location of all mineral resources in the authority area. This may include use of British Geological Survey maps as well as industry sources;
- consults with the minerals industry, other local authorities (especially district authorities in two-tier areas), local communities and other relevant interested parties to define Minerals Safeguarding Areas;
- sets out Minerals Safeguarding Areas on the policies map that accompanies the local plan and defines Mineral Consultation Areas; and
- adopts clear development management policies.

2.14 The PPG (paragraph 005) also outlines the important role district councils have in safeguarding minerals, for example, having regard to the minerals local plan when identifying suitable areas for non-mineral development in their local plans, and showing MSAs on their policy maps.

Local Policy

2.15 In accordance with paragraph 145 of the NPPF, MPAs should plan for a steady and adequate supply of aggregates by preparing an annual Local Aggregates Assessment (LAA), either individually or jointly by agreement with another or other MPAs, based on a rolling average of 10 years sales data and other relevant local information, and an assessment of all supply options (including marine-dredged, secondary and recycled sources).

2.16 Paragraph 061 of the PPG defines the LAA as *"an annual assessment of the demand for and supply of aggregates in a MPAs area"*. The purpose of the LAA is to assess the current local mineral provision against the requirements detailed in the NPPF and PPG, including the Government's Guidance on the Managed Aggregate Supply System.

2.17 Hertfordshire County Council published its most recent LAA in 2015[5]. The LAA states that the county council will seek to plan for the agreed East of England Aggregates Working Party sub-regional apportionment level for sand and gravel (1.39 million tonnes per annum (mtpa)) to provide for flexibility to maintain supply when the economy recovers. This will ensure that an adequate and steady supply of aggregate is achieved over the longer term.

2.18 Chapter 7 of the 2015 Hertfordshire LAA states that using the East of England Aggregates Working Party sub-regional apportionment of 1.39 mtpa, the county does not have sufficient permitted reserves to fulfil the requirement for a 15 year Minerals Local Plan period (the same would be true if the alternative approaches of using the 10 year rolling average sales or the 3 year average sales figures were to be followed). As a result, HCC are seeking to address the identified shortfall in permitted reserves by allocating sufficient land in the review of the Minerals Local Plan. This site selection methodology report and the subsequent site selection study aim to support this process.

Table 2.1: Sand and Gravel Apportionment Levels from the 2015 Hertfordshire LAA

Apportionment Level	Total
East of England AWP apportionment figure	1.39 million tonnes per annum
10 year average sales figure (2005-2014)	1.13 million tonnes per annum
3 year average sales figure (2012-2014)	1.15 million tonnes per annum.

[5] Retrieved on 9th August 2016 from: http://www.hertsdirect.org/services/envplan/plan/hccdevplan/mlp/locaggassmt/

3 Site Selection Methodology for Sand and Gravel

Purpose

3.1 The purpose of the site selection study for sand and gravel was two-fold:

- The first purpose was to assess the potential sand and gravel sites put forward through the Call for Sites process. HCC undertook a Call for Sites in early 2016, the aim of which was to receive detailed site proposals from quarry operators, land owners etc. The site-specific information submitted through this process was detailed, enabling a comparative assessment of potential sites through implementation of the site selection methodology. This process identifies, where appropriate, specific sites for allocation in the Minerals Local Plan.
- The second purpose was to enable the identification of areas to be allocated as preferred areas and/or areas of search if required.

Approach

3.2 The approach to developing the site selection methodologies for sand and gravel and brick clay, and methodology for the identification of MSAs and MCAs began with a review of the Council's existing site selection methodology in light of the current policy requirements, as summarised in **Section 2**. The review of policy requirements provided the background and context for developing the methodologies.

3.3 The Council's existing site selection methodology was used to identify sand and gravel sites during development of the 2007 Hertfordshire Minerals Local Plan, and was consulted upon in 2009. The comments received during that consultation, the current policy requirements, and updated background data and assumptions, were all used to inform the amended and updated draft site selection methodologies. These were prepared by LUC and Cuesta, working alongside officers at HCC.

3.4 Once drafted, the site selection methodologies for sand and gravel and brick clay, together with the methodology for the identification of MSAs and MCAs, were discussed at the Interested Parties Workshop held on 19th March 2015. The Workshop involved invited representatives of statutory and non-statutory consultees, industry and neighbouring local authorities.

3.5 The discussions that took place at the Workshop and comments made were noted and collated by HCC. Invitees were also given a two week period following the Workshop within which any additional comments could be submitted to HCC. These were reviewed and used to inform the final draft site selection methodologies for public consultation.

3.6 The final draft site selection methodologies were consulted upon as part of the initial consultation on the review of the MLP, which took place between 3rd August and 16th October 2015. Consultation responses received were analysed and used to inform the final site selection methodologies described below and in Chapters 4 and 5.

3.7 Since the initial consultation it was noted by LUC that the potential impact on airports had been omitted from the assessment criteria. Aircraft are vulnerable to birdstrikes, and 80% of all strikes occur on an aircraft's take-off or landing phase of flight, therefore highlighting the necessity for wildlife management on and within proximity of an airfield. Many types of development can attract birds, including large-flat roofed structures, landfill sites, gravel pit restoration schemes and nature reserves. As such, it was considered necessary that this should be added to the assessment criteria.

Sustainability Appraisal

3.8 Under the Planning and Compulsory Purchase Act 2004, Sustainability Appraisal (SA) is mandatory for Local Development Documents, including MLPs prepared by County Councils. For these documents it is also necessary to conduct an environmental assessment in accordance with the requirements of the Strategic Environmental Assessment (SEA) Directive (European Directive 2001/42/EC). Therefore, it is a legal requirement for the emerging MLP to be subject to SA and SEA throughout its preparation.

3.9 To this end, the proposed site selection methodologies which were subject to initial consultation were reviewed against the SA framework. Further information regarding this can be found in the Hertfordshire Minerals Local Plan Sustainability Appraisal and Strategic Environmental Assessment Scoping Report (May 2015). The next stage of the SA/SEA has appraised the sustainability effects of all the potential mineral site options once they have been put through Sieves 1 and 2 of the site selection methodology (see below).

Habitats Regulations Assessment

3.10 When preparing the Minerals Local Plan, Hertfordshire County Council is also required by law to carry out a Habitats Regulations Assessment (HRA), under the Conservation of Habitats and Species Regulations 2010[6]. The requirement for authorities to comply with the Habitats Regulations when preparing a Local Plan is explained in the national Planning Practice Guidance.

3.11 The HRA refers to the assessment of the potential effects of a development plan on one or more European sites, including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). Potential SPAs (pSPAs)[7], candidate SACs (cSACs)[8], Sites of Community Importance (SCIs)[9] and Ramsar sites should also be included in the assessment. A separate HRA Report has been prepared, which assesses the likely significant effects of the potential mineral site options on these types of nature conservation sites. None of the potential site allocations in the Minerals Local Plan are considered likely to have a significant effect on the European sites within 10km of Hertfordshire. However, the potential for in-combination effects is highlighted depending on which sites are preferred for allocation.

Site Selection Methodology for Sand and Gravel

3.12 The methodology for site selection for sand and gravel focused primarily on the identification of potential Specific Sites but also included consideration of more broadly-defined Preferred Areas and/or Areas of Search. The requirements are set out in para. 145 of the NPPF, and the terms are defined in paragraph 008 of the associated online Planning Practice Guidance.

3.13 Specific Sites were identified, initially, through a Call for Sites exercise, using a set of criteria and an associated assessment framework to narrow down alternative options, thereby identifying the most appropriate sites for allocation within the MLP. Once the specific site proposals had been received, the selection methodology consisted of three stages referred to as 'sieves', with the intention of sites being screened out of further detailed assessment if they did not meet the sieving criteria. However, in practice, the results of Sieve 2 and 3 were considered alongside each other when determining the potential suitability of sites. The same assessment process was applied to the existing three preferred areas[10] within the adopted Hertfordshire Minerals Local Plan so that the preferred areas could be compared to the sites identified through the call for sites exercise.

[6] Conservation of Habitats and Species Regulations 2010 (SI No. 2010/490).

[7] Potential SPAs are sites that have been approved by Government and are currently in the process of being classified as SPAs.

[8] Candidate SACs are sites that have been submitted to the European Commission, but not yet formally adopted.

[9] SCIs are sites that have been adopted by the European Commission but not yet formally designated as SACs by the Government.

[10] The preferred areas represent areas of the County's mineral reserves which are considered to have potential for defining further sand and gravel extraction sites if required.

3.14 It is important to note that at this stage the detailed site assessments undertaken for this exercise are not replacements for the assessments required as a part of any planning application for a minerals site.

3.15 The three stages in the site selection methodology were:

- **Sieve 1 – Major Constraints:** Discounting sites and/or areas, either in part or in full, which are subject to identified major constraints.
- **Sieve 2 – Resource Assessment:** With regard to the identification of specific sites, this sieve involved the verification of evidence relating to commercial viability and deliverability put forward through the Call for Sites process.
- **Sieve 3 – Detailed Site Assessments:** Assessed the sites that passed through Sieves 1 and 2 against more detailed environmental and planning constraints.

3.16 The three sieves are further described below.

Sieve 1 – Resource Assessment – Major Constraints

3.17 Certain constraints are acknowledged as absolute constraints to future minerals working. Therefore, any areas of resource or proposed sites (from the Call for Sites process) that fell within these constraints were not taken forward to Sieve 2. Where a site or area falls partly within an absolute constraint, that proportion of the site or area was discounted. The absolute constraints are:

- Urban areas, based on the Office of National Statistics urban area dataset, which includes built up areas and built up area subdivisions[11] (built-up areas (BUA) and built-up area sub-divisions (BUASD) are a new geography, created as part of the 2011 Census outputs. This data provides information on the villages, towns and cities where people live, and allows comparisons between people living in built-up areas and those living elsewhere. The definition follows a "bricks and mortar" approach, with BUAs defined as land with a minimum area of 20 hectares (200,000 square metres), while settlements within 200 metres of each other are linked).
- Sites with extant planning permission for other development (for the identification of preferred areas or areas of search, these were limited to those sites whose area is greater than 5ha due to difficulties associated with collection of data for smaller planning permissions such as house extensions etc.).
- Previously worked areas.

Sieve 2 – Resource Assessment

3.18 The purpose of Sieve 2 was to confirm the viability and deliverability of the sites put forward for consideration as Specific Sites. In line with the agreed methodology, it was assumed that sites put forward by, or with the clear involvement of, the minerals industry would be likely to be economically viable prospects. However, site-specific evidence for this was requested to be provided through the Call for Sites process to demonstrate deliverability during the Plan period. A further request for information from site promoters was made by HCC in September 2016.

3.19 Examples of the evidence required for specific sites put forward in this way included confirmation of both mineral operator and land owner willingness for mineral development to take place during the Plan period; evidence of the tonnage of reserves likely to be capable of being extracted within the Site; and confirmation that any mitigation measures needed to avoid significant adverse effects on the local environment had been taken into account by the proposer in assessing the Site's economic viability. Information submitted for each Site on each of these issues was scrutinised methodically as part of the Sieve 2 assessment, which also included independent

[11] Retrieved on 25th July 2016 from: http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/census/built-up-areas---built-up-area-sub-divisions/index.html

checks on the availability and characteristics of the resources likely to be present. The findings of these assessments are presented at **Appendix 1**.

3.20 The British Geological Survey (BGS) digital resource map for Hertfordshire was used as the starting point for the confirmation of resource availability. Before being used, the resource outlines as supplied by the BGS (Sand_and_Gravel_Superficial_v2, dated August 2016) were closely checked and updated to reflect the latest available information. This included confirmation of geological and resource information by comparison with the BGS's earlier Industrial Mineral Assessment Unit (IMAU) reports and accompanying 1:25,000-scale resource maps and borehole logs, and with the latest available BGS superficial geology mapping.

3.21 No additional borehole information was made available by industry to identify new resource areas or to eliminate previously identified resources. Significant refinements were able to be made, however, by eliminating previously worked resource areas. This was achieved utilising two additional sources of data: HCC's GIS outlines of worked, partly worked and operational mineral permissions; and the outlines of lakes (as shown on the latest OS topographic mapping) which were formed in parts of the Colne and Lee River valleys, as a result of former gravel extraction.

3.22 The resulting updated resource outlines, together with the underlying IMAU borehole data, were then utilised to confirm the availability of workable resources within each of the proposed allocation sites, and in each of the existing Preferred Areas. They were also used as the basis for identifying Mineral Safeguarding Areas (as explained further in Chapter 5 below).

3.23 As part of the Sieve 2 assessment, consideration was also given to the three **existing Preferred Areas** for future sand & gravel extraction within Hertfordshire:

- Preferred Area 1 comprises land close to the existing Hatfield Quarry. The south-western part is now a specific site proposal (Hatfield Aerodrome 5/0394-16), whilst the remaining, northern part is unworked and has not been subject to any previous applications for mineral working (as far as the GIS records show). The land is underlain by the same mineral resources as were worked in adjoining sites (i.e. Kesgrave sand & gravel beneath an overburden of glacial till) and having inspected the available resource information, including IMAU reports, with the exception of any specific site allocations, all of it justifies remaining as a Preferred Area for future working.
- Preferred Area 2 comprises two separate parcels of land, to the north and south of the existing Rickneys Quarry. The southern area is now included within a specific site proposal (Ware Park 3/0770-16), which also extends further east in places. The northern area has been subject to previous planning applications for mineral extraction dating from 1988 to 1995, all of which were withdrawn. All of the land is underlain by the same mineral resources as worked in Rickneys Quarry (i.e. Kesgrave sand & gravel overlain in part by an overburden of glacial till) and again, with the exception of any specific site allocations, all of it justifies remaining as a Preferred Area for future working.
- Preferred Area 3 comprises land to the south-east of the existing Tyttenhanger Quarry, almost all of which has now been worked, as extensions to that site. It should now be removed as a Preferred Area.

Sieve 3 – Detailed Site Assessments

3.24 The final step of the site selection methodology involved the consideration of high level designations together with more detailed local planning and environmental constraints, considerations and opportunities, and (where practicable) site specific details, including findings from the parallel Sustainability Appraisal (SA) process, Landscape and Visual Sensitivity Study and comments from HCC Highways officers.

3.25 Those sites and preferred areas that passed through Sieve 2 were assessed against these more detailed criteria and subjected to the evaluation process and scoring system outlined in **Table 3.1** below. Each criterion includes an explanation of how each score was applied in order to evaluate the relative merits and constraints of the potential sites. This allowed for a more detailed comparison to be made between site options. This sieve also had the ability to reduce the size of the areas taken forward rather than discounting them completely.

3.26 The criteria included in **Table 3.1** have been informed by Paragraph 013 of the PPG which outlines the principal issues that MPAs should address (as stated in **Section 2**), professional experience and feedback received through the Interested Parties Workshop and public consultation. Specific definitions of the term 'proximity' used within the scoring framework in **Table 3.1** was established during implementation of the site selection methodology, using established policy, guidance and best practice distances where possible. For example, paragraph 022 of the online PPG advises local planning authorities to:

"…consult the Forestry Commission about development proposals that contain or are likely to affect Ancient Semi-Natural woodlands or Plantations on Ancient Woodlands Sites (PAWS) (as defined and recorded in Natural England's Ancient Woodland inventory), including proposals where any part of the development site is within 500 metres of an ancient semi-natural woodland or ancient replanted woodland, and where the development would involve erecting new buildings, or extending the footprint of existing buildings".

3.27 To exclude potential sites at an earlier stage can be a difficult balancing exercise – taking account of the need for greater 'front-loading' of the planning process (as required by the Planning and Compulsory Purchase Act 2004), without risking the challenge of judicial review. Therefore, it was prudent to limit the depth of analysis carried out during this sieve, focusing primarily on any obvious reasons for inclusion or exclusion.

3.28 It is important that this evaluation process is not seen as a means of pre-judging the outcome of subsequent planning applications. It would be wrong, for example, to exclude a proposed site simply because it overlaps a particular designation, if it was felt that the resulting impacts were capable of being adequately mitigated; or if it were considered likely that the only alternative options would be less sustainable, overall. In many cases, such issues can only be properly addressed at the planning application stage, following detailed environmental assessment (which may include Environmental Impact Assessment required by the Town and Country Planning (Environmental Impact Assessment) Regulations 2011).

3.29 It is also important to note that few, if any, designations are an absolute obstacle to mineral extraction. For example, some of the designations considered in Sieve 3 are subject to the highest level of protection in the NPPF but, nevertheless, do not entirely exclude the possibility of mineral extraction (for example if there is an overriding need for the mineral and no reasonable alternatives, or if potential impacts can be adequately mitigated and/or if there are sufficient beneficial effects that could be achieved through appropriate restoration). However, recognising the statutory protection afforded to national and international designations is important, therefore these criteria include a 'dark red' category.

3.30 A number of potential criteria were considered for inclusion in Sieve 3, but not taken forward, for the following reasons:

- **Major Services** (gas pipelines, water pipelines, electricity transmission lines): Discounted due to detailed data and information not being available at this strategic stage of assessment.
- **Drainage:** Discounted as drainage is a site specific matter that would be dealt with at the planning application stage.
- **Commercial and economic issues:** Discounted due to this information being problematic to quantify and score consistently and comparably. Economic resource viability issues are dealt with under Sieve 2.
- **Mineral sterilisation:** This is partly addressed through the Sieve 3 criterion: Proximity of allocated residential or built development. However, scoring resource areas/sites on the extent to which mineral may be vulnerable to sterilisation by other development if not allocated for extraction is not considered appropriate as part of the site selection methodology. Economically viable minerals in Hertfordshire will be afforded relevant protection by the designation of MSAs and MCAs, and the supporting development management policies adopted as part of the emerging MLP.
- **Chalk streams:** The inclusion of a criterion relating to chalk streams was raised during the public consultation. Whilst recognised as an important natural feature and habitat, it is possible for mineral extraction to occur in close proximity to a chalk stream. This is

considered to be a site specific issue that would be dealt with at the planning application stage.

- **Sensitive receptors:** The inclusion of an additional criterion to assess proximity of potential mineral extraction sites to particularly sensitive receptors was raised during the public consultation. Such considerations beyond those criteria already included in Sieve 3, are considered.

3.31 It is important to bear in mind that mineral workings are considered to be compatible with certain constraints such as Best and Most Versatile (BMV) agricultural land and Green Belt. Whilst the PPG includes 'impact on BMV land' as an environmental issue that must be addressed by MPAs, minerals extraction is not precluded on this land designation. Paragraph 12 of the NPPF states that:

"Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality."

3.32 It has long been recognised that minerals working can be accommodated on BMV agricultural land provided that high environmental standards are maintained, best practice soil handling techniques are adhered to and sites are well restored. The PPG goes on to require that where mineral working is proposed on BMV land, the outline restoration and aftercare strategy should show, where practicable, how the methods used in the restoration and aftercare enable the land to retain its longer term capability, though the proposed after-use need not always be for agriculture.

3.33 The NPPF states that the Government attaches great importance to Green Belts, noting that the fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. Paragraph 90 of the NPPF lists those forms of development which are not inappropriate in Green Belt provided that they "preserve the openness of the Green Belt and do not conflict with the purposes of including land in Green Belt". These potential exemptions include mineral extraction, (largely because this is recognised as being a temporary use of land, with a capability of delivering progressive restoration, and because minerals can only be worked where they occur).

3.34 It is important to note that some of the criteria identified in **Table 3.1** (e.g. Cumulative Effects and Restoration) will also be able to be considered in greater detail once all potential resource areas/sites are known, as it is difficult to consider this solely on a site by site basis.

3.35 As shown in **Table 3.1** each of the criteria was considered in detail and was not approached as a blanket constraint. As noted earlier, in some cases a potential effect can be made acceptable through the use of appropriate mitigation and it is important that the sieve methodology does not pre-judge matters that should more properly be dealt with at the planning application stage. The assessment of a site and/or area against each of these criteria will not result in a simple yes or no; a range of evaluation scores and assumptions for each consideration have been developed, complementing the approach that has been undertaken during the SA of the Minerals Local Plan.

3.36 The information used to assess sites and areas against the criteria in **Table 3.1** was provided from a range of sources including spatial data in GIS form, HCC's own expertise (such as the Highways Team and the Minerals and Waste Planning Team), accessible online data sources maintained by statutory consultees (e.g. Environment Agency) and other sources of relevant environmental and sustainability information. However, data for some of the criteria, such as restoration opportunities and other unique local factors were not able to be supplied in GIS format. Such data was sought through the Call for Sites, from those putting forward potential sites and areas for consideration and/or from other stakeholders. In addition, the baseline information and findings from other studies undertaken by and for the Council such as the Sustainability Appraisal, Habitats Regulations Assessment and Strategic Flood Risk Assessment has been used.

3.37 Finally, while most of the site selection judgements throughout the Sieves were completed through a desk-based review of relevant information, site visits were also undertaken during Sieve 3 to verify judgements made on site.

3.38 In order to record the findings of the site selection process, a simple proforma (see **Appendix 1**) has been completed for each site or area, compiling information derived from GIS analysis of spatial data (e.g. proximity to environmental designations and sensitive or incompatible existing / planned development) and other (non-GIS) factors, and providing a score for each criterion. The scores for each site against all criteria are summarised in **Table 6.2**. This approach provides a simple but effective way to evaluate sites in a consistent, robust and transparent manner. In addition, at the bottom of each site proforma, summaries of the findings of the landscape and visual sensitivity and HCC Highways assessments were recorded. Following an update to their transport model, HCC Highways updated their assessments in September 2017. These updates have been reflected in the site proformas and throughout this document. These findings were taken into account alongside the Sieve 3 criteria judgements to help identify the site options likely to be most suitable for allocation within the Plan.

3.39 In the Landscape and Visual Sensitivity Study the sensitivity of individual site options was assessed using a five point sensitivity scale:

- High
- Moderate High
- Moderate
- Low Moderate
- Low

3.40 Sites and preferred areas considered to have a 'High' and 'Moderate High' sensitivity overall were considered to be of 'High' sensitivity in the site selection study (and colour-coded red); sites and preferred areas of 'Moderate' sensitivity were considered to be of 'Moderate' sensitivity in the site selection study (and colour-coded amber); and sites of 'Low Moderate' and 'Low' sensitivity overall were considered to be of 'Low' sensitivity in the site selection study (and colour-coded green).

3.41 The HCC Highway findings used a similar three tier 'Red-Amber-Green' scoring system to determine the potential impact of the site options on the local highway network. Therefore, sites which scored 'Green', 'Amber' and 'Red' in the HCC Highways Assessment were considered to be 'Low', 'Moderate' and 'High' in the site selection study, respectively. Sites that were unable to be assessed in the HCC Highways Study due to a lack of information were scored 'Grey'.

Table 3.1: Evaluation Framework for Sieve 3

3.42 The scoring key used in the evaluation framework is outlined below. As described above, the justification and reasoning behind the score given is detailed in the 'justification' section of each site/preferred area assessment proforma, thereby ensuring transparency and understanding of the decisions made. The completed proforma can be found in **Appendix 1**.

Key

Score	Description
Positive	There are positive impacts or benefits/enhancements.
Low	There are no/insignificant impact(s)/ issue(s).
Medium	There is a minor/moderate impact/issue which may be acceptable (and may involve mitigation).
High	There is a major impact/issue which may or may not be adequately mitigated.
Very High	There is an impact on a site or area of international or national significance within which working will only be permitted once an exception or alternative test in national policy have been met.

Criterion	Justification	Scoring	Data available
Airport Safeguarding Zones	Aircraft are vulnerable to birdstrikes, and 80% of all strikes occur on an aircraft's take-off or landing phase of flight, therefore highlighting the necessity for wildlife management on and within proximity of an airfield. Aerodrome administrators are responsible for administering bird activity with a 13km radius of the aerodrome. This is to mitigate the bird strike risk to aircraft and be aware of what species are in the local area.	N/A Sites or areas located outside of an Airport Safeguarding Zone. Sites or areas located within an Airport Safeguarding Zone. N/A N/A	Maps provided by HCC.

Criterion	Justification	Scoring	Data available
	Many types of development can attract birds, including large-flat roofed structures, landfill sites, gravel pit restoration schemes and nature reserves.		
Ancient Woodland	Ancient woodland is afforded protection through the NPPF, which notes that it is irreplaceable. Local planning authorities should refuse planning permission for development resulting in the loss or deterioration of ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss.	The potential for positive effects on ancient woodland is dependent on the exact nature and proposed design of the restoration of the minerals site, which may protect or increase the ecological connectivity of the woodland. However, this will not be known until the planning application stage. Sites or areas which are distant from ancient woodland. Sites or areas which lie in close proximity to ancient woodland. Sites or areas which are immediately adjacent to ancient woodland. Sites or areas that partly or entirely within ancient woodland.	Natural England's Ancient Woodland inventory.
Aquifers	Aquifer designations are defined in the EU Water Framework Directive, and these designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also	N/A Sites or areas which are outside of a designated aquifer. Sites or areas which are located	Environment Agency Dataset.

Criterion	Justification	Scoring	Data available
	their role in supporting water flows and wetland ecosystems. Mitigation measures and/or a precautionary approach to the operation of mineral workings can often be implemented. However, this is unlikely to be known until the planning application stage.	partly or entirely within a Secondary Aquifer. Sites or areas which are located partly or entirely within a Principal Aquifer. N/A	
BAP Priority Species or Habitats	The NPPF requires that, where possible, biodiversity loss, including direct loss of habitats and indirect losses through the fragmentation of green infrastructure networks, should be avoided. It is also necessary to consider sites that are not afforded statutory protection but are of local importance; especially those that provide ecological connectivity (including BAP habitats).	The restoration of minerals sites is increasingly adopting innovative practice and this could have positive effects on BAP Priority Species and Habitats for restoration to nature conservation. However, this would be very dependent on the exact nature and proposed design of the restoration of the minerals site, which may not be known until the planning application stage. Sites or areas which are outside of areas known to include BAP Priority Species or Habitats. Sites or areas which are partly within areas known to include BAP Priority Species and Habitats. Sites or areas that are entirely within areas known to include BAP Priority Species and Habitats. N/A	GIS information from HCC. Any relevant information from the HRA. Information provided through the Call for Sites.

Criterion	Justification	Scoring	Data available
BMV Land	Minerals extraction is not precluded on BMV. It has long been recognised that minerals working can be accommodated on best and most versatile (BMV) agricultural land, provided that high environmental standards are maintained, best practice soil handling techniques are adhered to and sites are well restored. Although, the potential to ensure these standards may not be known until the planning application stage.	N/A	National datasets
		Sites or areas not located within BMV Land or on lower grades (not 1, 2 or 3).	
		Sites or areas located within higher grades of BMV land.	
		N/A	
		N/A	
Cumulative effects	The NPPF states that local planning authorities should take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality. The 250m buffer used to assess the potential cumulative impacts of sites in close proximity is a precautionary distance which is often used in site selection studies of this kind. The NPPF states that local planning authorities must put in place policies that ensure high quality restoration and aftercare of mineral sites takes place, including for agriculture (safeguarding the long term potential of best and most versatile agricultural land and conserving soil resources), geodiversity, biodiversity, native woodland, the historic environment	Opportunities exist for contributing to a landscape-scale approach to mineral extraction and restoration. For example, this could include contributions to identified green infrastructure networks or corridors, but will depend upon the information available regarding such initiatives.	Table 2: permitted sand and gravel extraction sites in Hertfordshire and Table 6: permitted chalk extraction sites in Hertfordshire from HCC's Local Aggregate Assessment 2015. Knowledge from HCC officers.
		Sites or areas that are distant from existing mineral sites (greater than 250m away), or sites that are adjacent to or within close proximity to existing mineral sites but are distant from sensitive receptors and settlements.	
		Sites or areas that are adjacent or in close proximity to existing mineral sites (less than 250m) and	

Criterion	Justification	Scoring	Data available
	and recreation. Opportunities may sometimes exist for the creation of positive cumulative effects by adopting a landscape-scale approach to mineral extraction and restoration - for example by creating or re-establishing wildlife corridors and connectivity of habitats; by creating water storage / flood alleviation features; and/or by creating aesthetically pleasing landscape features.	within close proximity to the same settlement or sensitive receptor(s). N/A N/A	
Ecological status of water bodies	The EU Water Framework Directive (2000/60/EC) looks at the ecological health of both groundwater and surface water with the aim of achieving 'good ecological status' by 2027, and to ensure that there is no deterioration from existing statuses. The operation of mineral extraction sites can have a number of different impacts on habitats and species either within the boundary of the extraction site or in proximity to the site. There may be the potential for water pollution e.g. through addition of dust and silts to waterbodies or through accidental spills or run-off of oil from machinery for example. Thereby affecting the ecological status of water bodies. Noise and vibration arising from	N/A Sites or areas which are not located near to a water body. Sites or areas located adjacent to a water body. Sites or areas located within the boundary of a water body. N/A	Visual analysis of Ordnance Survey (OS) base maps. Any relevant information from the HRA.

Criterion	Justification	Scoring	Data available
	sand and gravel extraction could also affect aquatic species, however, it should be possible to avoid or mitigate adverse impacts, for example by timing works to avoid critical periods (e.g. spawning or breeding periods), or preventing work from being undertaken at night to avoid disturbance to nocturnal species (e.g. otters).		
Flood risk	As stated in the PPG, local authorities should take a sequential approach to developing in areas at risk of flooding, giving preference to locating development in Flood Zone 1, followed by Flood Zone 2 then Flood Zone 3. Minerals working and processing (except sand & gravel working) are classed as less vulnerable, which means that they are potentially compatible with all flood zones except for Flood Zone 3b, the functional floodplain7. Sand and gravel workings are classed as water-compatible development and are potentially suitable for all flood zones including 3b, the functional floodplain. However, National Planning Practice Guidance8 also states that mineral workings should not increase flood risk elsewhere and need to be designed, worked and restored	Some sites, which may dewater, may hold the potential to store excess water in times of heavy rain, which would be seen as a positive in terms of preventing flood risk. However, this may not be known until the planning application stage. Sites or areas located within Flood Zones 1-3a, and sand and gravel sites located within 3b. N/A N/A N/A	GIS information from HCC.

Criterion	Justification	Scoring	Data available
	accordingly.		
Geodiversity	National and locally important sites of geological/geomorphological interest (e.g. Local Geological Sites, formerly RIGS) should be protected under the NPPF. Although it is noted that quarrying often provides substantial opportunities for the creation of new geological exposures and for the creation of geodiversity trails. The NPPF requires planning authorities to aim to prevent harm to geological conservation interests through the use of criteria based policies, including minimising impacts on geodiversity. Mineral sites can potentially contribute to geodiversity by preserving and conserving geological features/landscapes that contribute towards the link between people, landscape and their culture. However, due to the methods of extraction and processing, this is more likely at less intensive sites (e.g. building stone) than aggregate sites.	The site provides one or more opportunities for the creation of new geological exposures and /or for the creation of geodiversity trails. Sites or areas that are either distant from geological conservation sites, or which hold opportunities to incorporate, enhance or preserve important geological features within the site. Sites or areas that are within or adjacent to national sites of geological interest (SSSI) or Local Geological Sites (LGS), other than those which are classed as 'finite' sites. Sites or areas that are within geological or geomorphological SSSIs which have been classified as 'finite' sites. N/A	GIS information from HCC. Information provided through the Call for Sites.
Green Belt	NPPF states that the Government attaches great importance to Green Belts, noting that the fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the	N/A Sites or areas located outside of Green Belt and/or site located within Green Belt but do not conflict with the purposes for its	GIS information from HCC; check the purposes for its designation does not conflict with mineral working.

Criterion	Justification	Scoring	Data available
	essential characteristics of Green Belts are their openness and their permanence. The NPPF lists mineral extraction as a form of development which is not inappropriate in Green Belt providing that it preserves the openness of the Green Belt and does not conflict with the purposes of including land in Green Belt.	designation. Sites or areas located within Green Belt which conflict with the purposes for its designation. N/A N/A	
Groundwater vulnerability	The NPPF states that local planning authorities should set out environmental criteria against which planning applications will be assessed so as to ensure that permitted operations do not have unacceptable adverse impacts on the natural environment, including from impacts on the flow and quantity of surface and groundwater and migration of contamination from sites. The extent to which a minerals extraction site will affect groundwater on a potential site depends on the type of mineral worked, site design and characteristics, and the geological conditions. Mineral sites that are in Source Protection Zone (SPZ) 1 could potentially lead to loss of contaminants or accidental pollution incidents. Potential for adverse effects on water quality will also be assessed at the	N/A Sites or areas located within Source Protection Zone 4 or outside of all Source Protection Zones. Sites or areas located within Source Protection Zones 2 and 3. Sites or areas located within Source Protection Zone 1. N/A	GIS information from HCC.

Criterion	Justification	Scoring	Data available
	planning application stage.		
Heritage designations	Heritage designations are protected by the NPPF. These include Scheduled Monuments, Listed Buildings, Conservation Areas, and Registered Historic Parks and Gardens. Such designations may be directly affected by minerals workings through their removal or damage, or by affecting their setting. Whilst the setting of heritage assets can be a critical part of their significance, it is not possible to consider this at the strategic planning stage. This will be an important consideration at the planning application stage. Working of minerals can lead to the investigation and recording of archaeological deposits, increasing knowledge and understanding. In addition, the restoration of a minerals site may improve the setting of a heritage asset. However it is not practicable to consider such issues at the strategic planning stage, but could be important issues at the planning application stage.	N/A Sites or areas which do not overlap with heritage designations. Sites of areas which partly overlap or are immediately adjacent to heritage designations. Sites or areas that contain heritage designations. Sites or areas that are partly or entirely within an international and/or national heritage designation.	GIS national datasets from Historic England. GIS information from HCC and district authorities.
International and national ecological designations	International and national ecological designations are protected through European and	The potential for positive effects on ecological designations is dependent on the exact nature and	GIS national datasets from Natural England's MAGIC database.

Criterion	Justification	Scoring	Data available
	National legislation. Such sites include Ramsar sites, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs). These nature conservation designations are given the highest level of protection and therefore should be protected against harm and in general mineral extraction within them should be avoided. However, it is recognised that in occasional situations, minerals development can have positive effects on these designations. For example, through the provision of flood alleviation or the creation of specific habitats.	proposed design of the restoration of the minerals site, which may not be known until the planning application stage. Sites or areas which are distant from international and national ecological designations. Sites or areas which lie in close proximity to international and national ecological designations. Sites or areas which are immediately adjacent to international and/or national ecological designations. Sites or areas that are partly or entirely within international and/or national ecological designations.	GIS information from HCC. Information provided through the Call for Sites.
Land ownership	The extent to which options put forward by industry are within their control can have a bearing on the likelihood sites will be available during the emerging MLP plan period.	N/A Sites in the control of the industry. Sites not in the control of the industry. N/A N/A	Information provided through the Call for Sites.
Landscape designations	Landscape Designations (e.g. AONB) are protected by the NPPF. Both national and local landscape	The restoration of minerals sites is increasingly adopting innovative practice and this could have	GIS national datasets from Natural England's MAGIC database.

Criterion	Justification	Scoring	Data available
	designations may be affected by the development of mineral workings. Landscape designations in poor condition could be enhanced through high quality restoration. However, this will not be able to be determined until the planning application stage.	positive effects on landscape designations. However, this would be very dependent on the exact nature and proposed design of the restoration of the minerals site, which may not be known until the planning application stage.	GIS information from HCC. Information provided through the Call for Sites.
		Sites which are outside of landscape designations.	
		Sites which are partly within or immediately adjacent to landscape designations.	
		Sites that are entirely within landscape designations.	
		Sites or areas that are partly or entirely within international and/or national landscape designations.	
Local Nature Reserves and/or Local Wildlife Sites	Locally important sites of nature conservation should be protected under the NPPF. Where possible, biodiversity loss, including direct loss of habitats and indirect losses through the fragmentation of green infrastructure networks, should be avoided. It is also necessary to consider sites that are not afforded statutory protection but are of local importance; especially those that provide ecological connectivity. However, the level of detail to aid understanding of potential impacts	The restoration of minerals sites is increasingly adopting innovative practice and this could have positive effects on local nature reserves for restoration to nature conservation. However, this would be very dependent on the exact nature and proposed design of the restoration of the minerals site, which may not be known until the planning application stage.	GIS information from HCC. Any relevant information from the HRA. Information provided through the Call for Sites.
		Sites or areas which are outside of Local Nature Reserves and/or Local	

Criterion	Justification	Scoring	Data available
	on Local Nature Reserves and/or Local Wildlife Sites would not be known until the planning application stage.	Wildlife Sites. Sites or areas which are partly within or immediately adjacent to Local Nature Reserves and/or Local Wildlife Sites. Sites or areas that are entirely within Local Nature Reserves and/or Local Wildlife Sites. N/A	
Proximity of allocated residential or built development	There could be potential for land use conflict where minerals sites are within or in close proximity to areas allocated for future residential or built development, as mineral resources could be sterilised or mineral operations could conflict with the neighbouring sensitive land uses. Mineral sterilisation could be avoided via prior extraction. Conflict between mineral operations and sensitive land uses could be mitigated by the use of stand-off distances, noise bunds and visual screening. However, the potential for this to occur would not be known until the planning application stage for either land use.	N/A Sites or areas are located away from planned built development. Sites or areas are located in close proximity to or adjacent to planned built development. Sites or areas are located within the boundary of planned built development. N/A	Data on housing allocations from HCC. Visual analysis of relevant Local Plan maps for areas planned for future residential development, however, the certainty of these development locations depends on the status of the Local Plan in question, i.e. how close to Adoption it is.
Recreation	The NPPF requires that planning decisions should guard against the unnecessary loss of valued social,	Sites or areas that have the potential for major enhancements for existing Public Rights of Way,	GIS information from HCC, plus analysis of OS base map for other types of leisure/ recreational

Criterion	Justification	Scoring	Data available
	recreational and cultural facilities and services, particularly where this would reduce the community's ability to meet its day-to-day needs. Sites could have effects on the amenity of users of Public Rights of Way, open spaces (e.g. common land, access land, and community forests) and recreational facilities if they are in close proximity. There may also be opportunities for enhancement to recreational facilities during the development of particular mineral sites, as set out in the NPPF. In addition, there may be opportunities to create new recreation areas/open spaces during the restoration of mineral sites.	open spaces or recreational facilities and/or the development of new Public Rights of Way, open spaces or recreational facilities. Sites or areas that have the potential for minor enhancements for existing Public Rights of Way, open spaces or recreational facilities, or are located away from Public Rights of Way, open spaces or recreational facilities. Sites or areas that are located within close proximity of Public Rights of Way, open spaces or recreational facilities. Sites or areas that are adjacent to or are located within the boundary of Public Rights of Way, open spaces or recreational facilities. N/A	facilities and open spaces. Analysis of Sustrans Maps will be completed for cycle routes.
Restoration	The NPPF states that local planning authorities must put in place policies that ensure high quality restoration and aftercare of mineral sites takes place, including for agriculture (safeguarding the long term potential of best and most	N/A Sites or areas where there are clear opportunities for high quality restoration and aftercare.	Information provided through the Call for Sites.

Criterion	Justification	Scoring	Data available
	versatile agricultural land and conserving soil resources), geodiversity, biodiversity, native woodland, the historic environment and recreation. Appropriate restoration (i.e. the formation of final landform contours and replacement of soils) and reclamation (i.e. making the site suitable for an appropriate after-use), has always been an important aspect of mineral planning and is specified by conditions attached to most modern mineral permissions. Restoration should take place at the earliest opportunity, during a phased extraction or if appropriate upon completion of quarrying.	Sites or areas where there are some opportunities for high quality restoration and aftercare. Sites or areas where there is no prospect of restoration and reclamation to an appropriate future land use. N/A	
Sensitive land uses	Minerals sites could have effects on the health and amenity of local residents and communities from dust, noise and vibration. The NPPF is clear that MPAs should ensure that unavoidable noise, dust and particle emissions and any blasting vibrations are controlled and mitigated or removed at source. Past (e.g. Minerals Policy Statement 2) and current guidance (e.g. NPPF) state that residential properties and other sensitive uses can be affected by dust up to 1km from the source, and that concerns are most likely to be experienced	N/A Sites or areas are distant from sensitive land uses. Sites or areas are in close proximity to sensitive land uses. Sites or areas are located adjacent to or within the boundary of sensitive land uses. N/A	Visual analysis of Ordnance Survey (OS) base maps.

Criterion	Justification	Scoring	Data available
	near to sources, generally within 100m depending on site characteristics and in the absence of appropriate mitigation.		
Sustainable transport	The NPPF states that plans and decisions should ensure developments that generate significant movements can maximise the use of sustainable transport modes. The majority of minerals sites will involve road transportation with some involving more movements than others. However, proximity to rail lines/depots/sidings, rivers/canals or wharves could provide opportunities to explore more sustainable modes of transporting minerals.	N/A Sites or areas with direct access to the rail network or navigable waterway network. Sites or areas with economically viable access to the rail network or navigable waterway network. Sites or areas distant from the rail network or navigable waterway network. N/A	National datasets and OS base map. GIS information from HCC. Information provided through the Call for Sites.
Sustainable transport and pollution to the environment (dust, air, water)	Environmental receptors, including humans, are protected from pollution through a number of planning and environmental regulations. Mineral workings have the potential to result to pollution of water courses, aquifers and the air. However, there are strict environmental controls in place to prevent this occurring at the site level. Potential for adverse effects on surface water quality will be assessed at the planning	N/A Sites or areas where associated traffic would not be likely to travel through an Air Quality Management Area, or are located adjacent to a strategic road network. Sites or areas where associated	Visual analysis of Ordnance Survey (OS) base maps. GIS information from HCC. Information provided through the Call for Sites.

Criterion	Justification	Scoring	Data available
	application stage. Proposals for all types of minerals sites could contribute to increasing air pollution with regards to minerals transportation by road, as well as any air pollution associated with the operation of the sites and processes used such as dust from blasting, crushing and processing. The further vehicles transporting minerals have to travel along local roads (i.e. not on the primary road network), the higher the potential for more localised air pollution as they are likely to travel more slowly on local roads. In addition, if the mineral site is within, or vehicles are travelling through, AQMAs where existing air pollution issues have been identified, there is more potential for negative effects on air quality.	traffic would be likely to travel through an Air Quality Management Area, or are in close proximity to a strategic road network. Sites or areas located within an Air Quality Management Area, or not in close proximity to a strategic road network. N/A	

4 Site Selection Methodology for Brick Clay

4.1 NPPF paragraph 146 requires MPAs to plan for at least 25 years' supply of brick clay, through the provision of a stock of permitted reserves sufficient to support the level of actual and proposed investment required for new and existing plant and the maintenance and improvement of existing plant and equipment. The extant Minerals Local Plan was produced before the introduction of the NPPF, and had not planned for a 25 year stock of clay reserves. The Council therefore has no previous site selection methodology for brick clay.

4.2 The location of the brick clay resource is provided by the BGS mineral resource information for development plans. No other detailed information is known to exist, within the public domain. This is not least because of the specialist nature of the bricks produced in this area and the relatively unusual nature of the Reading Formation and Clay-with-Flints resources which are used. These factors dictate different methods of extraction and processing, compared with those used in much larger brick pits (for example in neighbouring Bedfordshire) where the resources tend to be thicker and more consistent, and they also influence which parts of the resource can be utilised. There is one remaining brick clay works in Hertfordshire: Bovingdon Bricks.

4.3 With the geology highly variable and the brick clay production very specialist in its nature, a detailed assessment such as that proposed for sand and gravel is not possible for brick clay for the purpose of the MLP. As an industrial mineral, the full hierarchy of Specific Sites, Preferred Areas and Areas of Search is not applicable to Brick Clay; MPAs are simply required to provide a stock of permitted reserves of at least 25 years. However, in view of the lack of sufficiently detailed geological information to identify an appropriate area more precisely, it was proposed during the consultation on the methodology that the whole resource will be identified as a Mineral Safeguarding Area, and a policy for clay included within the Minerals Local Plan.

4.4 However, two specific sites for brick clay have been put forward during the Call for Sites process, therefore these two sites (MLPCS013 and MLPCS020) have been subject to the Sieve 3 detailed site assessment (described in Chapter 3).

5 Mineral Safeguarding

5.1 Mineral Safeguarding Areas (MSAs) and Mineral Consultation Areas (MCAs) are complementary aspects of ensuring that important mineral resources remain available for use by future generations, rather than being needlessly 'sterilised' (rendered unavailable for extraction) by other forms of development.

5.2 The reasoning behind this, as noted in paragraph 2.3.1 of the British Geological Survey (BGS) report 'Mineral safeguarding in England: good practice advice'[12] is that mineral resources are finite and can only be worked where they naturally occur.

5.3 Safeguarding of selected mineral resources also helps to ensure that the planning system retains the flexibility to identify potential areas for future extraction which would have the least impact on the environment, if they were ever worked, whilst not creating a presumption that such working will necessarily occur.

5.4 Safeguarding is therefore a specific requirement identified in paragraph 143 of the NPPF which states that, in preparing Local Plans, local planning authorities should (inter alia): "*define Minerals Safeguarding Areas …… and define Minerals Consultation Areas based on these*". However, it should be noted that whilst MCAs should be based on the MSAs, the two areas need not coincide completely.

5.5 The PPG defines both MSAs and MCAs as:

- **Minerals Safeguarding Area** – an area designated by a MPA which covers known deposits of minerals which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.
- **Minerals Consultation Area** – a geographical area, based on a Mineral Safeguarding Area, where the district or borough council should consult the MPA for any proposals for non-minerals development.

5.6 In addition, paragraph 143 makes clear that MPAs should also safeguard:

- existing, planned and potential rail heads, rail links to quarries, wharfage and associated storage, handling and processing facilities for the bulk transport by rail, sea or inland waterways of minerals, including recycled, secondary and marine-dredged materials; and
- existing, planned and potential sites for concrete batching, the manufacture of coated materials, other concrete products and the handling, processing and distribution of substitute, recycled and secondary aggregate material.

5.7 HCC already has an adopted Supplementary Planning Document (SPD) relating to MCAs, which will be reviewed as part of the Minerals Local Plan Review and consolidated into the Plan itself. Whilst the current SPD identifies MCAs as a statutory consultation mechanism, it does not explicitly identify MSAs, as required by the NPPF. The difference may appear to be a subtle one (since MCAs are now required to be based on MSAs), but it is nevertheless important because MCAs alone do not explicitly safeguard the resources.

5.8 MSAs are the means by which the resource outcrops affected by mineral safeguarding policies are meant to be identified in Minerals Local Plans; whereas MCAs are intended to show the areas within which local district councils (in two-tier authorities) should consult with the MPAs on relevant development proposals (which proposals that fall into this category are defined through policy). Whilst MSA and MCA boundaries can be coincident, they need not be: MSAs will usually cover the whole of a particular resource outcrop (unless that outcrop is very extensive and largely unconstrained, in which case only certain parts of it might need to be safeguarded); whereas MCAs may:

[12] *Mineral safeguarding in England: good practice advice*. Wrighton et. al., 2011.

- extend beyond the minerals resource to incorporate a 'buffer' beyond the outcrop boundary, to protect the resource from sterilisation by proximal development;
- exclude areas of the MSA that have already been sterilised e.g. residential areas and therefore do not require consultation; and/or,
- exclude certain types of development that would not normally bring about the sterilisation of a resource through use of an exceptions policy. Such development would include householder extension or advertisement applications for example.

Methodology

5.9 The basic procedures for minerals safeguarding are clearly set out in the BGS guidance referred to above. This is explicitly referenced in the online PPG (most recently revised in March 2014) and is therefore a formal expectation of national policy.

5.10 The procedures comprise the following sequential steps (note that the guidance currently refers to Core Strategies and Development Plan Documents, but these terms have been updated below to refer to Local Plans in accordance with the requirements of the National Planning Policy Framework and the Town and Country Planning (Local Planning) (England) Regulations 2012):

- Step 1: Identify the best geological and mineral resource information.
- Step 2: Decide which mineral resources to safeguard and the physical extent of MSAs.
- Step 3: Undertake Consultation on MSAs.
- Step 4: Decide on the approach to safeguarding in the Local Plan.
- Step 5: Include Development Management Policies in the Local Plan.
- Step 6: Include safeguarding in District-level Local Plans.
- Step 7: Include mineral assessments in the local list of information requirements.

5.11 Of these, Step 1 is effectively covered by the same work that has been undertaken during the sand and gravel site selection procedure and the initial resource identification for brick clay, and utilised the same ('best available') mineral resource information. As explained in Chapter 3, this comprised the BGS digital resource information together with relevant material (including borehole data) from the Industrial Mineral Assessment Unit (IMAU) reports and any other readily available information which was able to refine the BGS maps, following the advice set out in section 4.1 of the BGS guidance). In practice, this primarily involved excluding areas of resource which have already been worked.

5.12 The starting point for Step 2, as agreed with HCC, was that the MSAs should cover only sand and gravel and brick clay resources. The physical extent of those resources has been based on the detailed information identified in Step 1. In accordance with paragraphs 4.2.9 to 4.2.11 of the BGS guidance, the MSAs cover the whole of the mapped resource areas and do NOT exclude areas which are already subject to other designations or those which are already sterilised by existing urban development. Rather, they are defined purely by the physical boundaries of the resource itself (including areas concealed beneath overburden, where this is shallow enough to permit economic extraction of the mineral) together with a suggested 'buffer' of 100 metres.

5.13 The Step 3 consultation will form part of the public consultation scheduled for Summer 2017. However, feedback from the Interested Parties Workshop (19th March 2015) has helped inform the site selection methodologies, which has also contributed usefully to the consultation required. In particular the consultation scheduled for Summer 2017 will contribute to final decisions regarding the extent of economically viable resources; the width of buffer zones applied to MSAs; and the extent to which MCA boundaries might justifiably differ from those of the MSAs (e.g. to exclude areas of existing built development).

5.14 Steps 4 to 6, relating to the development of corresponding policies etc. are beyond the scope of this study, although they have been informed by the Interested Parties Workshop and will also be informed by the wider consultation process.

5.15 Step 7, relating to the determination of planning applications within MSAs, is clearly beyond the scope of this site selection study.

Proposed MSAs and MCAs

5.16 **Figure 5.1** shows the extent of the sand and gravel resource within Hertfordshire and **Figure 5.2** shows the proposed MSA for sand and gravel. **Figure 5.3** shows the brick clay resource within Hertfordshire and **Figure 5.4** shows the proposed MSA for brick clay. Note that the proposed MCAs for sand and gravel and brick clay are the same as the MSAs shown in **Figure 5.2** and **Figure 5.4.**[13]

[13] Both the defined MSA and the defined MCA include a 100m buffer area for sand and gravel and brick clay.

Figure 5.1: Sand & Gravel Resources in Hertfordshire

Figure 5.2: Proposed Mineral Safeguarding Areas for Sand & Gravel Resources in Hertfordshire

Figure 5.3: Brick Clay Resources in Hertfordshire

Figure 5.4: Proposed Mineral Safeguarding Areas for Brick Clay Resources in Hertfordshire

6 Site and Preferred Area Assessment Findings

6.1 HCC received 19 submissions from landowners, agents or minerals operators during the 2016 Call for Sites exercise (proposing 18 sand and gravel sites and one brick clay site) and an additional brick clay site was subsequently submitted. In addition, HCC previously defined three preferred areas in the adopted MLP within which it had been considered that there was potential for defining further sand and gravel extraction sites if required. **Table 6.1**sets out the sites submitted and **Figure 6.1** illustrates their location within the County, and **Figure 6.2** provides a closer view of individual site boundaries.

6.2 All 20 of the sites were put through the Sieve 1, 2 and 3 assessments described in Chapter 3. All three of the preferred areas were put through Sieve 1 and 2 and two of the preferred areas (1 and 2) progressed to Sieve 3. The detailed results of the sites and preferred area assessments are presented in **Appendix 1**.

Table 6.1: List of Sites put forward through the Call for Sites

Site ID	Site Name	Mineral to Extract
MLPCS001	Land at Cromer Hyde Farm	Sand and Gravel
MLPCS002	Land at Salisbury Hall	Sand and Gravel
MLPCS003	Land at Ware Park	Sand and Gravel
MLPCS004	Land at Pynesfield	Sand and Gravel
MLPCS005[14]	Nashe's and Fairfold's Farm	Sand and Gravel
MLPCS006	Hatfield Aerodrome	Sand and Gravel
MLPCS007	Barwick	Sand and Gravel
MLPCS008	Hatfield – Furze Field	Sand and Gravel
MLPCS009	Hatfield Quarry – Land adjoining Coopers Green Lane	Sand and Gravel
MLPCS010	The Briggens Estate	Sand and Gravel
MLPCS011	Water Hall Quarry – Farm Fields Area	Sand and Gravel
MLPCS012	Water Hall Quarry – Broad Green Area	Sand and Gravel
MLPCS013	Harry's Field	Brick Clay
MLPCS014	Water Hall Quarry – Bunkers Hill South Area	Sand and Gravel
MLPCS015	Plashes Farm	Sand and Gravel
MLPCS016	Water Hall Quarry – Howe Green Area	Sand and Gravel

[14] Site MLPCS005 has since been withdrawn and therefore has not been recommended as a potential site for inclusion in the plan.

Site ID	Site Name	Mineral to Extract
MLPCS017	Robins Nest Hill	Sand and Gravel
MLPCS018	Southfield Wood East	Sand and Gravel
MLPCS019	Pipers End	Sand and Gravel
MLPCS020	Roundhill Wood	Brick Clay
Preferred Areas		
1	Land close to the existing Hatfield Quarry	Sand and Gravel
2	Land to the north of the existing Rickneys Quarry	Sand and Gravel
3	Land to the south-east of the existing Tyttenhanger Quarry	Sand and Gravel

Sieve 1 – Major Constraints

6.3 As set out in **Section 3**, Sieve 1 sought to screen out sites and preferred areas that were known to affect absolute constraints to future minerals working. None of the 20 sites were screened out at this stage.

6.4 Details of the sites' Sieve 1 assessments can be found in the proforma in **Appendix 1**.

Sieve 2 – Resource Assessment

6.5 Similar to Sieve 1, no sites were screened out at Sieve 2.

6.6 As can be seen from the results of the Sieve 2 assessment (**Appendix 1**), ten of the twenty sites put forward for consideration (including both brick clay sites) were considered to have adequately demonstrated economic viability and deliverability during the Plan period. All ten of these sites were put forward by mineral operators/brick manufacturers:

- MLPCS002
- MLPCS003
- MLPCS004
- MLPCS006
- MLPCS008
- MLPCS009
- MLPCS010
- MLPCS012
- MLPCS013
- MLPCS020

6.7 The remaining ten sites were considered not to have sufficient information to determine their economic viability and deliverability:

- MLPCS001
- MLPCS005

- MLPCS007
- MLPCS011
- MLPCS014
- MLPCS015
- MLPCS016
- MLPCS017
- MLPCS018
- MLPCS019

6.8 Without the necessary information to disregard any of these sites as unviable or undeliverable, all 20 sites were taken through to Sieve 3, to consider their suitability against the environmental and social criteria in Sieve 3 (see below).

6.9 All three of the preferred areas were put through Sieve 1 and 2 and two of the preferred areas (1 and 2) progressed to Sieve 3. Preferred area 3 was not assessed at Sieve 3 due to the fact that the area has now been worked through extensions to the neighbouring Tyttenhanger Quarry. Consequently, Preferred area 3 can no longer be considered as a preferred area.

Sieve 3 – Detailed Site Assessments

6.10 **Table 6.2** and **Table 6.3** provide a visual summary of the suitability of each of the 20 sites against detailed site assessment criteria (with the sand and gravel sites and preferred areas presented in **Table 6.2** and brick clay sites presented in **Table 6.3**). **Table 6.4** and **Table 6.5** then provide a discursive summary of the potential effects of the sand and gravel sites, brick clay sites and sand and gravel preferred areas respectively taking into account the assessments set out in **Appendix 1**, HCC Highways comments (**Appendix 2**) and the findings of the Landscape and Visual Sensitivity Study, Sustainability Appraisal and Habitats Regulations Assessments.

6.11 From **Table 6.2** and **Table 6.3** it can be seen that a number of the assessment criteria are unlikely to be affected by minerals development at any of the 20 promoted sites or two preferred areas, as shown by the green 'positive' or 'low' impact scores, e.g. flood risk, geodiversity, Green Belt and designated landscapes. In addition, many of the criteria may only have a medium or low impact, which should be able to be reduced or mitigated through mitigation measures incorporated into the development proposal and implemented during operation of the site. While some potentially high or very high impacts have been identified for all of the site options, these may also be able to be mitigated either through readjustment of site boundaries and/or mitigation measures implemented during design and operation (e.g. diversion of Public Right of Ways (PRoWs)). However, increasing the use of sustainable transport is unlikely to be improved through development of any of the potential mineral sites.

6.12 Following **Table 6.4** and **Table 6.5**, a further summary table (**Table 6.6**) shows the potential sand and gravel sites and brick clay sites and sand and gravel preferred areas ranked in order of the number of very high, then high, then medium impacts.

Figure 6.1: Location of Sites in County Context

Figure 6.2: Location of Sites

Table 6.2 : Summary of the suitability of each of the sand and gravel sites and preferred areas against detailed site assessment criteria

Site ID	Assessment Criteria																				
	Airport Safeguarding Zones	Ancient Woodland	Aquifers	BAP Priority Species or Habitats	BMV Land	Cumulative Effects	Ecological Status of Water Bodies	Flood Risk	Geodiversity	Green Belt	Groundwater Vulnerability	Heritage Designations	International and National Ecological Designations	Land Ownership	Landscape Designations	Local Nature Reserves and Local Wildlife Sites	Proximity of allocated residential or built development	Recreation	Restoration	Sensitive Land Uses	Sustainable transport	Sustainable transport and pollution to the environment
MLPCS001	Medium	High	Medium	Medium	Medium	Low	Low	Positive	Low	Medium	Medium	Very High	Low	Medium	Low	Medium	Medium	High	Low	High	High	Medium
MLPCS002	Low	Low	Medium	Low	Medium	Low	High	Positive	Low	Low	Low	Low	Low	Low	Low	Low	Medium	High	Low	High	High	Medium
MLPCS003	Low	High	Medium	Positive	Medium	Low	Low	Positive	Low	Low	High	Low	Low	Low	Low	Positive	Medium	High	Low	High	High	High
MLPCS004	Low	Low	Medium	Positive	Medium	Low	Low	Positive	Low	Low	High	Low	Low	Low	Low	Positive	Medium	Medium	Low	Medium	High	Low
MLPCS005[15]	Medium	High	Medium	Low	Medium	Low	Low	Positive	Low	Medium	Medium	Low	Low	Low	Low	Medium	Low	High	Low	Medium	High	High
MLPCS006	Medium	Low	Medium	Positive	Medium	Low	High	Positive	Low	Low	Medium	Medium	Low	Low	Low	Positive	Medium	High	Low	High	High	Low
MLPCS007	Low	High	Medium	Medium	Medium	Low	High	Positive	Low	Low	High	Medium	High	Medium	Low	Medium	Medium	High	Low	High	High	Medium
MLPCS008	Medium	Low	Medium	Low	Medium	Low	Medium	Positive	Low	Low	Medium	Low	Low	Low	Low	Medium	Medium	Medium	Medium	High	High	High
MLPCS009	Medium	Low	Medium	Positive	Medium	Low	High	Positive	Low	Low	Medium	Medium	Low	Low	Low	Low	Medium	High	Low	High	High	Low
MLPCS010	Low	High	Medium	Positive	Medium	Low	High	Positive	Low	Low	Medium	Medium	Low	Low	Low	Medium	Medium	High	Low	High	High	Low
MLPCS011	Low	Low	Medium	Positive	Medium	Low	High	Positive	Low	Low	Medium	Medium	Low	Low	Low	Medium	Low	High	Low	Medium	High	High
MLPCS012	Low	Low	Medium	Low	Medium	Low	Low	Positive	Low	Low	Medium	Low	Low	Low	Low	Low	Medium	Low	Low	High	High	High
MLPCS014	Low	High	Medium	Low	Medium	Low	Medium	Positive	Low	Low	Medium	Low	Low	Low	Low	Low	Medium	High	Low	High	High	High
MLPCS015	Low	Very High	Medium	Medium	Medium	Low	Medium	Positive	Low	Low	Medium	Medium	Very High	Low	Low	Medium	Low	High	Low	High	High	High
MLPCS016	Low	Low	Medium	Low	Medium	Medium	High	Positive	Low	Low	Medium	Low	Low	Low	Low	Low	Medium	High	Medium	High	High	High
MLPCS017	Low	Low	Medium	Low	Medium	Low	Medium	Positive	Low	Low	Medium	Low	Low	Medium	Low	Low	Medium	Low	Low	Medium	High	High
MLPCS018	Low	High	Medium	Low	Medium	Low	Low	Positive	Low	Low	Medium	Medium	Low	Medium	Low	Medium	Medium	High	Low	Medium	High	Medium
MLPCS019	Low	Low	Medium	Medium	Medium	Low	High	Positive	Low	Low	Medium	Low	Low	Medium	Low	Medium	Medium	Medium	Low	High	High	High
Preferred Area 1	Medium	Low	Medium	Medium	Medium	Low	High	Low	Low	Low	Medium	Medium	Low	Medium	Low	Medium	Medium	High	Low	Medium	High	Low
Preferred Area 2	Low	Very High	Medium	Medium	Medium	Medium	Low	Low	Low	Low	High	Medium	Low	Medium	Low	Medium	Low	High	Low	Medium	High	Medium

[15] Site MLPCS005 has since been withdrawn and therefore has not been recommended as a potential site for inclusion in the plan.

Table 6.3: Summary of the suitability of each of the brick clay sites against detailed site assessment criteria

	Assessment Criteria																				
Site ID	**Airport Safeguarding Zones**	**Ancient Woodland**	**Aquifers**	**BAP Priority Species or Habitats**	**BMV Land**	**Cumulative Effects**	**Ecological Status of Water Bodies**	**Flood Risk**	**Geodiversity**	**Green Belt**	**Groundwater Vulnerability**	**Heritage Designations**	**International and National Ecological Designations**	**Land Ownership**	**Landscape Designations**	**Local Nature Reserves and Local Wildlife Sites**	**Proximity of allocated residential or built development**	**Recreation**	**Restoration**	**Sensitive Land Uses**	**Sustainable transport**	**Sustainable transport and pollution to the environment**
MLPCS013	Low	Low	Low	Positive	Medium	Low	Low	Positive	Low	Low	Medium	Medium	Low	Medium	Low	Positive	Low	Medium	Low	High	High	High
MLPCS020	Low	Very High	High	Medium	Medium	Low	High	Positive	Low	Low	Medium	Low	Low	Medium	Very High	High	Low	High	Low	High	High	High

Table 6.4: Summary of the potential effects of the sand and gravel sites

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
MLPCS001	Land at Cromer Hyde Farm	Welwyn Hatfield	2.4 million tonnes	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **very high impact** on **heritage designations** as the site is partly located within Brocket Hall Registered Park and Garden and a **high impact** on: • **ancient woodland** as the site is adjacent to two areas of ancient woodland; • **recreation** as the site contains a PRoW and is adjacent to a number of additional PRoWs and the Brocket Park Golf Course; • **sensitive land uses** as the site is immediately adjacent to a number of residential properties; and • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway (this is the same for all of the site options). The site is considered to have an overall **moderate-high landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised significant concerns** which are likely to attract highway objections. MLPCS001 is in close proximity to MLPCS005, MLPCS006, MLPCS008 and MLPCS009. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The cumulative effects would be greater with regard to sites

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				MLPCS008 and MLPCS009 as they are much closer than sites MLPCS005 and MLPCS006. The SA of this site option identifies significant negative effects against SA objectives 1.1 (biodiversity), 1.3 (air pollution of ecological sites), 2.1 (cultural heritage), 3.1 (landscape), 8.4 (agricultural land) and 9.2 (recreation). This assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS002	Land at Salisbury Hall	Hertsmere	860,000	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **high impact** on: • **the ecological status of water bodies** as the site contains a water body; • **recreation** as the site contains a PRoW and is immediately adjacent to a number of additional PRoWs and the Watford Football Club Training Ground; • **sensitive land uses** as a number of residential properties are located adjacent to the site; and • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised significant concerns** which are likely to attract highway objections. The SA of this site option identifies minor negative effects against SA objectives 1.1 (biodiversity protection), 4.1 (water quality), 2.1 (cultural heritage) and 3.1 (landscape) and significant negative effects against SA objective 9.2 (recreation).

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				Therefore this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS003	Land at Ware Park	East Hertfordshire	2.6 million	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond and **local wildlife sites** and **BAP priority habitats or species** as the proposed restoration includes woodland and a small area of wetland. However, it is considered that development of the site could have a **high impact** on: • **ancient woodland** as the site is located immediately adjacent to one area of ancient woodland; • **groundwater** as the site is partly located within Source Protection Zone 1; • **recreation** as the site contains a PRoW and is immediately adjacent to a number of additional PRoWs; • **sensitive land uses** as the site is located immediately adjacent to a number of residential properties; • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as the site is not within close proximity to the strategic road network. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. The SA of this site option identifies minor negative effects against SA objectives 3.1 (landscape) and 9.1 (health & amenity) and significant negative effects against SA objectives 1.1 (biodiversity), 4.1 (Water), 9.2 (recreation) and 1.3 (air

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				pollution of ecological sites). This assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS004	Land at Pynesfield	Three Rivers	300,000 – 350,000	The site scored very well during the site assessment as it is considered that **only two high impact** is likely to occur which is on **groundwater** and **sustainable transport** as a result of the site's lack of access to the rail network or a navigable waterway. The development of the site is also considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond and **local wildlife sites** and **BAP priority habitats and species** as the proposed restoration includes a wetland sustainable drainage scheme. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has no fundamental highway objection**, in principle. The SA of this site option identifies minor negative effects against SA objectives 9.2 (recreation loss) and 3.1 (landscape). In addition, the SA identifies significant negative effects against SA objectives 1.1 (biodiversity protection) and 1.3 (biodiversity air quality effects). Therefore, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS005 (withdrawn)	Nashe's and Fairfold's Farm	St. Albans	1.25 million	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **high impact** on: • **ancient woodland** as the site is adjacent to one area of

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				ancient woodland; • **recreation** as the site contains a PRoW and is adjacent to a number of additional PRoWs; • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as the site is not within close proximity to the strategic road network. The site is considered to have an overall **moderate-high landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised significant concerns** which are likely to attract highway objections. MLPCS005 is in close proximity to MLPCS001, MLPCS006, MLPCS008 and MLPCS009. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The cumulative effects would be greater with regard to site MLPCS006 as it is much closer than sites MLPCS001, MLPCS008 and MLPCS009. The SA of this site option identifies a minor negative effects against SA objective 2.1 (heritage), 3.1 (landscape), 4.1 (water quality) and 9.4 (aerodrome safety). The SA identifies significant negative effects against SA objectives 1.1 (biodiversity) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above. Site MLPCS005 has since been withdrawn and therefore has not been recommended as a potential site for inclusion in the plan.

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
MLPCS006	Hatfield Aerodrome	St. Albans and Welwyn Hatfield	8 million	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond and **local wildlife sites** and **BAP priority species or habitats** as the restoration proposals include the creation of grassland and wetland. However, it is considered that development of the site could have a **high impact** on: • **the ecological status of water bodies** as the site contains two watercourses; • **recreation** as the site contains one PRoW and is used for informal recreation and is adjacent to the Hertfordshire Sports Village and a number of additional PRoWs; • **sensitive land uses** as the site is adjacent to a number of residential properties; and • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. MLPCS006 is in close proximity to MLPCS001, MLPCS005, MLPCS008 and MLPCS009. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The cumulative effects would be greater with regard to site MLPCS005 as it is much closer than sites MLPCS001, MLPCS008 and MLPCS009. The SA of this site option identifies minor negative effects

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				against SA objectives 2.1 (heritage), 4.1 (Water) and 9.4 (aerodrome safety) and significant negative effects against SA objective 1.1 (biodiversity protection), 1.3 (Biodiversity and air quality), 8.4 (agricultural land) and 9.2 (recreation). In addition, the SA also identifies a minor positive effect (with some uncertainty) against SA objective 6.2 (flood alleviation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS007	Barwick	East Hertfordshire	Estimated at 5 million tonnes	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **high impact** on: • **ancient woodland** as the site is adjacent to an area of ancient woodland; • **the ecological status of water bodies** as the site contains a watercourse; • **groundwater** as part of the site is within Source Protection Zone 1; • **recreation** as the site contains a PRoW and is adjacent to a number of additional PRoWs; • **sensitive land uses** as the site is adjacent to a number of residential properties; and • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway. The site was also considered to have an overall **moderate-high landscape and visual sensitivity** to mineral extraction. **HCC Highways has not provided any comments** as no information was submitted with the call for sites in relation to the proposed access points or HGV routing.

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				MLPCS007 is in close proximity to MLPCS015. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies a minor negative effect against SA objective 2.1 (heritage) and significant negative effects against SA objectives 1.1 (biodiversity protection), 1.3 (biodiversity air quality effects), 4.1 (water), 9.2 (recreation) and 3.1 (landscape). In addition, a significant positive effect is identified against SA objective 6.2 (flood alleviation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS008	Hatfield – Furze Field	Welwyn Hatfield	532,000	The site scored well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **high impact** on: • **sensitive land uses** as a number of residential properties lie within 100m of the site; • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as it not located within close proximity to the strategic road network. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				overcome following further information/ assessment. MLPCS008 is in close proximity to MLPCS001, MLPCS005, MLPCS006 and MLPCS009. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The cumulative effects would be greater with regard to sites MLPCS001 and MLPCS009 as they are much closer than sites MLPCS005 and MLPCS006. The SA of this site option identifies minor negative effects against SA objective 9.4 (aerodrome safety), 9.2 (recreation loss), 3.1 (landscape) and 4.1 (water quality). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS009	Hatfield Quarry – Land adjoining Coopers Green Lane	Welwyn Hatfield	6.6 million	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive effect** on **flood risk** as any proposal may include a dewatering pond and **BAP priority species or habitats** as the proposed restoration includes the creation of wetland. However, it is considered that development of the site could have a **high impact** on: • **the ecological status of water bodies** as the site contains a watercourse and is adjacent to an additional watercourse; • **recreation** as the site contains two PRoWs and is adjacent to two designated areas of open space; • **sensitive land uses** as the site is adjacent to a number of residential properties; and • **sustainable transport** as the site is not located within

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				close proximity to the rail network or a navigable waterway. The site is considered to have an overall **moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. MLPCS009 is in close proximity to MLPCS001, MLPCS005, MLPCS006 and MLPCS008. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The cumulative effects would be greater with regard to sites MLPCS001 and MLPCS008 as they are much closer than sites MLPCS005 and MLPCS006. The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage), 3.1 (landscape), 4.1 (water quality) and 9.4 (aerodrome safety) and a significant negative effect against SA objective 1.1 (biodiversity protection), 1.3 (biodiversity air quality effects), 8.4 (agricultural land) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS010	The Briggens Estate	East Hertfordshire	10.7 million	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond and **BAP priority species or habitats** as the proposed restoration includes the allocation of land for nature conservation purposes. However, it is considered that the development of the site could have a **high impact** on: • **ancient woodland** as the site is adjacent to one area of

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				ancient woodland; • **the ecological status of water bodies** as the site contains a watercourse and a number of small water bodies; • **recreation** as the site contains two PRoWs; • **sensitive land uses** as the site is adjacent to a number of residential properties; and • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/assessment. The SA of this site option identifies minor negative effects against SA objectives 4.1 (water) and 3.1 (landscape) and significant negative effects against SA objectives 1.1 (biodiversity), 1.3 (biodiversity air pollution effects), 2.1 (heritage), 8.4 (agricultural land) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS011	Water Hall Quarry – Farm Fields Area	East Hertfordshire	956,000	The site scored reasonably well during the site assessment. The development site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond and **BAP priority species or habitats** as the proposed restoration includes the creation of two lakes separated by wetland and additional wildlife habitat. However, it is considered that development of the site could have a **high impact** on: • **the ecological status of water bodies** as the site contains one watercourse and is adjacent to another watercourse;

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				• **recreation** as the site is adjacent to a PRoW and within close proximity of three additional PRoW; • **sustainable transport** as the site is not located within close proximity of the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as the site is not located within close proximity of the strategic road network. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. MLPCS0011 is in close proximity to MLPCS012, MLPCS014, MLPCS016, MLPCS017, MLPCS018 and MLPCS019. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage), 3.1 landscape), 4.1 (water quality) and 9.2 (recreation) and significant negative effects against 1.1 (biodiversity). In addition, the SA identifies a significant positive effect (with some uncertainty) against SA objective 6.2 (flood alleviation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS012	Water Hall Quarry – Broad Green Area	East Hertfordshire	450,000	The site scored well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				pond. However, it is considered that development of the site could have a **high impact** on: • **sensitive land uses** as the site is immediately adjacent to a number of residential properties; • **sustainable transport** as the site is not located within close proximity of the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as the site is not located within close proximity of the strategic road network. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. MLPCS0012 is in close proximity to MLPCS011, MLPCS014, MLPCS016, MLPCS017, MLPCS018 and MLPCS019. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage), 3.1 (landscape) and 4.1 (water quality) and a significant adverse effect against SA objective 1.1 (biodiversity protection). In addition, a minor positive effect is recorded in relation to SA objective 9.3 (recreation provision). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
MLPCS014	Water Hall Quarry – Bunkers Hill South Area	East Hertfordshire	1 million	The site scored reasonably well during the site assessment. The development of the site is considered likely to have **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **high impact** on: • **ancient woodland** as the site is adjacent to one area of ancient woodland; • **recreation** as the site is adjacent to one PRoW; • **sensitive land uses** as the site is adjacent to a number of residential properties; • **sustainable transport** as the site is not located within close proximity of the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as the site is not located within close proximity to the strategic road network. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. MLPCS0014 is in close proximity to MLPCS011, MLPCS012, MLPCS016, MLPCS017, MLPCS018 and MLPCS019. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies minor negative effects

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				against SA objectives 2.1 (heritage), 3.1 landscape) and 9.2 (recreation loss) and a significant negative effect against SA objective 1.1 (biodiversity). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS015	Plashes Farm	East Hertfordshire	500,000	The site scored less well during the site assessment than other sites because it is considered that development of the site could have a **very high impact** on: • **ancient woodland** as the site contains three areas and is adjacent to three additional areas of ancient woodland; and • **international and national ecological designations** as the site is adjacent to Plashes Wood SSSI (Site of Special Scientific Interest). The site is also considered likely to have a **high impact** on: • **recreation** as the site contains three PRoW; • **sensitive land uses** as the site is adjacent to Plashes Farm; • **sustainable transport** as the site is not located within close proximity of the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as the site is not located within close proximity to the strategic road network. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. The site is considered to have an overall **moderate-high landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				overcome following further information/ assessment. MLPCS015 is in close proximity to MLPCS007. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage) and 4.1 (water quality) and significant negative effects against SA objectives 1.1 (biodiversity), 1.3 (biodiversity air quality effects), 3.1 (landscape) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS016	Water Hall Quarry – Howe Green Area	East Hertfordshire	1.7 million	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **high impact** on: • **the ecological status of water bodies** as the site contains one watercourse which also runs down its eastern boundary; • **recreation** as the site contains two PRoW and is within close proximity of an additional PRoW; • **sensitive land uses** as the site is adjacent to residential properties; • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway; and

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				• **sustainable transport and pollution to the environment** as the site is not located within close proximity of the strategic road network. The site is considered to have an overall **moderate landscape and visual sensitivity** to mineral extraction and HCC Highways has not assessed the site as **no details of access arrangements were submitted with the call for sites submission**. If access is proposed from Robin Nest Hill it is anticipated that improvements will be required to accommodate mineral excavation at the site. MLPCS0016 is in close proximity to MLPCS011, MLPCS012, MLPCS014, MLPCS017, MLPCS018 and MLPCS019. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies minor negative effects against SA objective 3.1 (landscape) and significant negative effects against SA objectives 1.1 (biodiversity protection), 4.1 (water quality) and 9.2 (recreation loss). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS017	Robins Nest Hill	East Hertfordshire	1 million	The site scored very well during the site assessment as it is considered that development of the site is only likely have a **high impact** on: • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway; • **sustainable transport and pollution to the**

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				environment as the site is not located within close proximity to the strategic road network. The development of the site is also considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. The site is considered to have an overall **moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. MLPCS0017 is in close proximity to MLPCS011, MLPCS012, MLPCS014, MLPCS016, MLPCS018 and MLPCS019. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies a minor negative effect against SA objective 3.1 (landscape) and 4.1 (water quality) and significant adverse effects against SA objectives 1.1 (biodiversity protection). In addition, the SA identifies a minor positive effect (with some uncertainty) against SA objective 9.3 (recreation provision). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS018	Southfield Wood East	East Hertfordshire	500,000	The site scored reasonably well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **high impact** on: • **ancient woodland** as the site is adjacent to one area of

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				ancient woodland; • **recreation** as the site contains two PRoW; and • **sustainable transport** as the site is not located within close proximity of the rail network or a navigable waterway. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. MLPCS0018 is in close proximity to MLPCS011, MLPCS012, MLPCS014, MLPCS016, MLPCS017 and MLPCS019. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies a minor negative effect against SA objective 3.1 (landscape) and significant negative effects against SA objectives 1.1 (biodiversity), 1.3 (biodiversity air pollution effects), 2.1 (historic environment) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS019	Pipers End	East Hertfordshire	1.4 million	The site scored reasonably well during the site assessment. The development of site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. However, it is considered that development of the site could have a **high impact** on: • **the ecological status of water bodies** as the site contains two watercourses and is adjacent to two additional

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes)	Summary of potential effects if site developed for mineral extraction
				watercourses; • **sensitive land uses** as the site is adjacent to a number of residential properties; • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as the site is not located within close proximity to the strategic road network. The site is considered to have an overall **moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. MLPCS0019 is in close proximity to MLPCS011, MLPCS012, MLPCS014, MLPCS016, MLPCS017 and MLPCS018. As such, if the sites were to come forward for extraction at the same time or immediately after one another there is potential for cumulative adverse effects (additive or temporal effects respectively) with regard to transport (e.g. vehicular movements and emissions) and the amenity of sensitive receptors (e.g. air quality, noise). The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage), 3.1 (landscape) and 4.1 (water quality) and significant adverse effects against SA objective 1.1 (biodiversity protection) and 9.2 (recreation loss). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.

Table 6.5: Summary of the potential effects of the brick clay sites

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes/m^3)	Summary of potential effects if site developed for mineral extraction
MLPCS013	Harry's Field	Dacorum	140,000 tonnes	The site scored well during the site assessment. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond and **local wildlife sites** and **BAP priority species or habitats** as the proposed restoration includes ecological restoration. However, it is considered that the development of the site could have a **high impact** on: • **sensitive land uses** as the site is adjacent to a number of residential properties; • **sustainable transport** as the site is not located within close proximity to the rail network or a navigable waterway; and • **sustainable transport and pollution to the environment** as the site is not located within close proximity to the strategic road network. The site is considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage) and 3.1 (landscape) and significant adverse effects against SA objective 1.1 (biodiversity protection). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
MLPCS020	Roundhill Wood	Dacorum	15,000m^3	The site scored less well during the site assessment than other sites because it is considered that development of the site could have a **very high impact** on:

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes/m^3)	Summary of potential effects if site developed for mineral extraction
				• **ancient woodland** as the site contains Roundhill Wood Ancient Woodland. • **landscape designations** as the site is entirely located within the Chilterns Area of Outstanding Natural Beauty The site is also considered likely to have a **high impact** on: • **aquifers** as the site is located on a principal aquifer. • **ecological status of water bodies** as the site contains a number of small water bodies. • **Local Nature Reserves** and **Local Wildlife Sites** as the site lies entirely within a Local Wildlife Site. • **recreation** as the site contains four PRoW. • **sensitive land uses** as the site is located immediately adjacent to a number of residential properties. • **sustainable transport** as the site is not located within close proximity to the rail network or navigable waterway network. • **sustainable transport and pollution to the environment** as the site is not located within close proximity to the strategic road network. The development of the site is considered likely to have a **positive impact** on **flood risk** as any proposal may include a dewatering pond. The site is also considered to have an overall **moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. The SA of this site option identifies significant negative effects against SA objectives 1.1 (biodiversity protection), 1.3 (biodiversity air pollution effects), 3.1 (landscape), 8.4

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes/m^3)	Summary of potential effects if site developed for mineral extraction
				(agricultural land) and 9.2 (recreation loss). In addition, minor negative effects are identified against SA objectives 2.1 (historic environment), 4.1 (water quality), 7.1 (recycling) and 9.1 (health and well being). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.
1	Land close to the existing Hatfield Quarry	Welwyn Hatfield	N/A	Development within this Preferred Area could have a **high impact** on: • **Ecological status of water bodies** as there are a number of water bodies adjacent to the Preferred Area. • **Recreation** as the Preferred Area is part of Ellenbrook Fields, which is an area of recreational green space. • **Sustainable transport** as the Preferred Area is not located within close proximity to the rail network or navigable waterway network. The site is also considered to have an overall **low-moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. The SA of this Preferred Area identifies significant negative effects against SA objectives 1.1 (biodiversity protection), 1.3 (biodiversity air pollution effects), 4.1 (water quality) and 9.2 (recreation loss). Minor negative effects were identified against SA objectives 2.1 (historic environment), 7.1 (recycling), 8.4 (agricultural land), 9.1 (health and wellbeing) and 9.4 (aerodrome safety). Positive or neutral effects were recorded against all other SA objectives, with the exception of SA objective 5.2 (energy efficiency), to which effects were uncertain. Overall, this assessment is broadly consistent with

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes/m^3)	Summary of potential effects if site developed for mineral extraction
				the site selection study assessment summarised above.
2	Land to the north of the existing Rickneys Quarry	East Hertfordshire	N/A	Development within this Preferred Area could have a **very high impact** on: • **Ancient Woodland** as there are two areas of replanted ancient woodland within the Preferred Area and further areas of ancient woodland adjacent to the Preferred Area. The site is also considered likely to have a **high impact** on: • **Groundwater vulnerability** as part of the site lies within SPZ 1. • **Recreation** as several PRoW cross the Preferred Area. • **Sustainable transport** as this Preferred Area is distant from the rail network and the navigable waterway network. The site is also considered to have an overall **moderate landscape and visual sensitivity** to mineral extraction and **HCC Highways has raised some concerns** which could be overcome following further information/ assessment. The SA of this Preferred Area identifies significant negative effects against SA objectives 1.1 (biodiversity protection), 1.3 (biodiversity air pollution effects), 2.1 (historic environment), 4.1 (water quality) and 9.2 (recreation loss). Minor negative effects were identified against SA objectives 7.1 (recycling), 8.4 (agricultural land) and 9.1 (health and wellbeing). Positive or neutral effects were recorded against all other SA objectives, with the exception of SA objective 5.2 (energy efficiency), to which effects were uncertain. Overall, this assessment is broadly consistent with the site selection study assessment summarised above.

Site ID	Site Name	District(s)	Proposed mineral reserve (tonnes/m^3)	Summary of potential effects if site developed for mineral extraction
				Note that restoration details are not available for this Preferred Area.

Table 6.6: Proposed sites and preferred areas ranked in terms of their potential impact on the site and surrounding environment

Ranking	Site ID	Sieve 2	Sieve 3 Assessment Criteria																							
			Airport Safeguarding Zones	Ancient Woodland	Aquifers	BAP Priority Species or Habitats	BMV Land	Cumulative Effects	Ecological Status of Water Bodies	Flood Risk	Geodiversity	Green Belt	Groundwater Vulnerability	Heritage Designations	International and National Ecological Designations	Land Ownership	Landscape Designations	Local Nature Reserves and Local Wildlife Sites	Proximity of allocated residential or built development	Recreation	Restoration	Sensitive Land Uses	Sustainable transport	Sustainable transport and pollution to the environment	Landscape and Visual Assessment	HCC Highways Assessment
Sand and Gravel Sites																										
1	MLPCS004		Low	Low	Medium	Positive	Medium	Low	Low	Positive	Low	Low	High	Low	Low	Low	Low	Positive	Medium	Medium	Low	Medium	High	Low	Low-Moderate	Low
2	MLPCS012		Low	Low	Medium	Low	Medium	Low	Low	Positive	Low	Low	Medium	Low	Low	Low	Low	Low	Medium	Low	Low	High	High	High	Low-Moderate	Moderate
3	MLPCS017		Low	Low	Medium	Low	Medium	Low	Medium	Positive	Low	Low	Medium	Low	Low	Medium	Low	Low	Medium	Low	Low	Medium	High	High	Moderate	Moderate
4	MLPCS008		Medium	Low	Medium	Low	Medium	Low	Medium	Positive	Low	Low	Medium	Low	Low	Low	Low	Medium	Medium	Medium	Medium	High	High	High	Low-Moderate	Moderate
5	Preferred Area 1		Medium	Low	Medium	Medium	Medium	Low	High	Low	Low	Low	Medium	Medium	Low	Medium	Low	Medium	Medium	High	Low	Medium	High	Low	Low-Moderate	Grey
6	MLPCS006		Medium	Low	Medium	Positive	Medium	Low	High	Positive	Low	Low	Medium	Medium	Low	Low	Low	Positive	Medium	High	Low	High	High	Low	Low-Moderate	Moderate
7	MLPCS009		Medium	Low	Medium	Positive	Medium	Low	High	Positive	Low	Low	Medium	Medium	Low	Low	Low	Low	Medium	High	Low	High	High	Low	Moderate	Moderate
8	MLPCS018		Low	High	Medium	Low	Medium	Low	Low	Positive	Low	Low	Medium	Medium	Low	Medium	Low	Medium	Medium	High	Low	Medium	High	Medium	Low-Moderate	Moderate
9	Preferred Area 2		Low	Very High	Medium	Medium	Medium	Medium	Low	Low	Low	Low	High	Medium	Low	Medium	Low	Medium	Low	High	Low	Medium	High	Medium	Moderate	Moderate
10	MLPCS002		Low	Low	Medium	Low	Medium	Low	High	Positive	Low	Low	Low	Low	Low	Low	Low	Low	Medium	High	Low	High	High	Medium	Low-Moderate	High
11	MLPCS010		Low	High	Medium	Positive	Medium	Low	High	Positive	Low	Low	Medium	Medium	Low	Low	Low	Medium	Medium	High	Low	High	High	Low	Low-Moderate	Moderate
12	MLPCS011		Low	Low	Medium	Positive	Medium	Low	High	Positive	Low	Low	Medium	Medium	Low	Low	Low	Medium	Low	High	Low	Medium	High	High	Low-Moderate	Moderate
13	MLPCS019		Low	Low	Medium	Medium	Medium	Low	High	Positive	Low	Low	Medium	Low	Low	Medium	Low	Medium	Medium	Medium	Low	High	High	High	Moderate	Moderate
14	MLPCS003		Low	High	Medium	Positive	Medium	Low	Low	Positive	Low	Low	High	Low	Low	Low	Low	Positive	Medium	High	Low	High	High	High	Low-Moderate	Moderate

Ranking	Site ID	Sieve 2	Airport Safeguarding Zones	Ancient Woodland	Aquifers	BAP Priority Species or Habitats	BMV Land	Cumulative Effects	Ecological Status of Water Bodies	Flood Risk	Geodiversity	Green Belt	Groundwater Vulnerability	Heritage Designations	International and National Ecological Designations	Land Ownership	Landscape Designations	Local Nature Reserves and Local Wildlife Sites	Proximity of allocated residential or built development	Recreation	Restoration	Sensitive Land Uses	Sustainable transport	Sustainable transport and pollution to the environment	Landscape and Visual Assessment	HCC Highways Assessment
15	MLPCS014		Low	High	Medium	Low	Medium	Low	Medium	Positive	Low	Low	Medium	Low	Low	Low	Low	Low	Medium	High	Low	High	High	High	Low-Moderate	Moderate
16	MLPCS016		Low	Low	Medium	Low	Medium	Medium	High	Positive	Low	Low	Medium	Low	Low	Low	Low	Low	Medium	High	Medium	High	High	High	Moderate	Grey
17	MLPCS005[16]		Medium	High	Medium	Low	Medium	Low	Low	Positive	Low	Medium	Medium	Low	Low	Low	Low	Medium	Low	High	Low	Medium	High	High	Moderate-High	High
18	MLPCS007		Low	High	Medium	Medium	Medium	Low	High	Positive	Low	Low	High	Medium	Low	Medium	Low	Medium	Medium	High	Low	High	High	Medium	Moderate-High	Grey
19	MLPCS001		Medium	High	Medium	Medium	Medium	Low	Low	Positive	Low	Medium	Medium	Very High	Low	Medium	Low	Medium	Medium	High	Low	High	High	Medium	Moderate-High	High
20	MLPCS015		Low	Very High	Medium	Medium	Medium	Low	Medium	Positive	Low	Low	Medium	Medium	Very High	Low	Low	Medium	Low	High	Low	High	High	High	Moderate-High	Moderate
Brick Clay Sites																										
1	MLPCS013		Low	Low	Low	Positive	Medium	Low	Low	Positive	Low	Low	Medium	Medium	Low	Medium	Low	Positive	Low	Medium	Low	High	High	High	Low-Moderate	Moderate
2	MLPCS020		Low	Very High	High	Medium	Medium	Low	High	Positive	Low	Low	Medium	Low	Low	Medium	Very High	High	Low	High	Low	High	High	High	Moderate	Moderate

* Sites have been ranked 1-20 for the sand and gravel sites and 1-2 for the brick clay sites and sand and gravel Preferred Options, with 1 being the site with the least high impacts and 18 or 2 being the site with the highest impacts.

[16] Site MLPCS005 has since been withdrawn and therefore has not been recommended as a potential site for inclusion in the Plan.

7 Conclusions

7.1 This section summarises the conclusions of the Site Selection Study, highlighting which of the 18 sand and gravel site options, two sand and gravel preferred areas and two brick clay site options are likely to be the most appropriate for allocation in the Hertfordshire Minerals Local Plan.

7.2 All 20 site options and two preferred areas have been subjected to Sieves 1, 2 and 3 of the site selection assessment as well as separate landscape and visual sensitivity and highways assessments. Site MLPCS005 has been withdrawn and so is not recommended for allocation in the Plan. However, in order to provide a comprehensive picture of the full range of site options, site MLPCS005 has been included within the site selection assessment.

7.3 **Figure 7.1** illustrates the ranking of sites outlined in **Table 6.6** above according to their potential impact on the site and surrounding environment.

Sand and gravel site options

7.4 Of the 18 sand and gravel sites and two sand and gravel preferred areas, site option MLPCS004 Pynesfield stands out as the least constrained option. MLPCS004 is considered to have potential to have high impacts on only two Sieve 3 assessment criteria (groundwater and sustainable transport) and scores 'low-moderate' and 'green' in the landscape and visual sensitivity assessment and highways assessments respectively. MLPCS004 is a relatively small site option located at the southern tip of the County close to the M25 and M40 motorways, directly adjacent to the London Borough of Hillingdon and South Buckinghamshire District.

7.5 Six sand and gravel site options and the two sand and gravel preferred areas have only three or four 'red' scores indicating a modest range of high impacts across the assessment criteria and therefore potential suitability for allocation. Starting with the least constrained, these are:

- MLPCS012 Broad Green has potential for high impacts against three Sieve 3 assessment criteria: sensitive land uses, sustainable transport and transport related pollution.
- MLPCS017 Robins Nest Hill has potential for high impacts against two Sieve 3 assessment criteria 'sustainable transport' and 'transport related pollution', and scored 'red' in the Sieve 2 assessment.
- MLPCS008 Furze Field has potential for high impacts against three Sieve 3 assessment criteria: sensitive land uses, sustainable transport and transport related pollution.
- Preferred Area 1 has potential for high impacts against three Sieve 3 assessment criteria: Ecological status of water bodies, recreation and sustainable transport.
- MLPCS006 Hatfield Aerodrome has potential for high impacts against four Sieve 3 assessment criteria: ecological status of water bodies, recreation, sustainable transport and transport related pollution.
- MLPCS009 Land adjoining Coopers Green Lane has potential for high impacts against four Sieve 3 assessment criteria: ecological status of water bodies, recreation, sensitive land uses and sustainable transport.
- MLPCS018 Southfield Wood has potential for high impacts against three Sieve 3 assessment criteria, ancient woodland, 'recreation' and 'sustainable transport', and scored 'red' in the Sieve 2 assessment.
- Preferred Area 2 has potential for very high impacts against one Sieve 3 assessment criterion: Ancient Woodland. This Preferred Area also has potential for high impacts against three Sieve 3 assessment criteria: Groundwater vulnerability, recreation and sustainable transport.

7.6 These six sand and gravel site options and two preferred areas are all located to the north, east and west of Hatfield in the centre of the County in close proximity to the A414 which runs through the middle of the County connecting the sites to Hatfield, Hertford, Hemel Hempstead, St Albans and Welwyn Garden City.

7.7 Seven sand and gravel site options have five and six 'red' scores indicating a moderate range of high impacts across the assessment criteria and lower potential suitability for allocation. Starting with the least constrained, these are:

- MLPCS002 Land at Salisbury Hall has potential for high impacts against four Sieve 3 assessment criteria: ecological status of water bodies, recreation, sensitive land uses, and sustainable transport. In addition, HCC's Highways impact assessment identified potential for the site to have high impacts on the local highway network.
- MLPCS011 Farm Fields has potential for high impacts against four Sieve 3 assessment criteria 'ecological status of water bodies', 'recreation', 'sustainable transport' and 'transport related pollution', and scored 'red' in the Sieve 2 assessment.
- MLPCS019 Pipers End has potential for high impacts against four Sieve 3 assessment criteria, 'ecological status of water bodies', 'sensitive land uses', 'sustainable transport' and 'transport related pollution', and scored 'red' in the Sieve 2 assessment.
- MLPCS003 Land at Ware Park has potential for high impacts against six Sieve 3 assessment criteria: ancient woodland, groundwater vulnerability, recreation, sensitive land uses, sustainable transport and transport related pollution.
- MLPCS010 Briggens Estate has potential for high impacts against five Sieve 3 assessment criteria: ancient woodland, ecological status of water bodies, recreation, sensitive land uses and sustainable transport.
- MLPCS014 Bunkers Hill South has potential for high impacts against five Sieve 3 assessment criteria, 'ancient woodland', 'recreation', 'sensitive land uses', 'sustainable transport' and 'transport related pollution', and scored 'red' in the Sieve 2 assessment.
- MLPCS016 Howe Green has potential for high impacts against five Sieve 3 assessment criteria, 'ecological status of waterbodies', 'recreation', 'sensitive land uses', 'sustainable transport' and 'transport related pollution', and scored 'red' in the Sieve 2 assessment.

7.8 These seven site options are all located to the east and west of Hatfield and to the north and east of Hertford in the centre of the County. Again these sites are in close proximity to the A414 which runs through the middle of the County connecting the sites to Hatfield, Hertford, Hemel Hempstead, St Albans and Welwyn Garden City.

7.9 The remaining four sand and gravel site options (MLPCS001 Cromer Hyde Farm, MLPCS005 Nashe's and Fairfold's Farm, MLPCS007 Barwick and MLPCS015 Plashes Farm) have over seven 'red' scores suggesting that these sites offer the least potential as sand and gravel site allocations. Sites MLPCS001 and MLPCS005 lie to the north west of Hatfield, whereas sites MLPCS007 and MLPCS015 represent the most north eastern site options. Site MLPCS001 has the potential for very high impacts on heritage designations within close proximity to the site. Site MLPCS015 has potential for very high impacts on the pockets of ancient woodland it contains. Furthermore, all four options lie within close proximity to sensitive land uses and have the potential for high impacts on the local recreation resource, sustainable transport network and landscape.

7.10 There is some uncertainty attached to the suitability of the relatively unconstrained sand and gravel site options MLPCS017 and MLPCS018, moderately constrained sites MLPCS011 and MLPCS019 and highly constrained sites MLPCS001, MLPCS005, MLPCS007, MLPCS014, MLPCS015 and MLPCS016. These ten sites all score 'red' in the Sieve 2 assessment due to a lack of information to conclusively determine their economic viability and deliverability. This uncertainty should be resolved before any of these site options are allocated within the Minerals Local Plan.

7.11 **Overall, the sand and gravel site options and preferred areas that score between one and four 'red' scores (i.e. MLPCS004, MLPCS012, MLPCS017, MLPCS008, MLPCS006, MLPCS009 and MLPCS018) are likely to have the greatest potential to mitigate the adverse impacts associated with their excavation and operation and are therefore**

considered to be the most appropriate site options for allocation in the Minerals Local Plan. As Preferred Area 1 and 2 also score between one and four 'red' scores, these areas could be considered as continuing preferred areas.

Brick clay site options

7.12 The two brick clay site options lie close to the western edge of the County bordering Buckinghamshire. Site option MLPCS013, to the east of Chesham scores considerably better than site option MLPCS020 which lies further to the north west to the west of Berkhamsted:

- MLPCS013 has potential for high impacts against three Sieve 3 assessment criteria: sensitive land uses, sustainable transport and transport related pollution.
- MLPCS020 has potential for high impacts against nine Sieve 3 assessment criteria: ancient woodland, aquifers, ecological status of water bodies, landscape, Local Nature Reserves and Local Wildlife Sites, recreation, sensitive land uses, sustainable transport and transport related pollution. There is potential for very high impacts on the ancient woodland that sits within the site and the wider landscape.

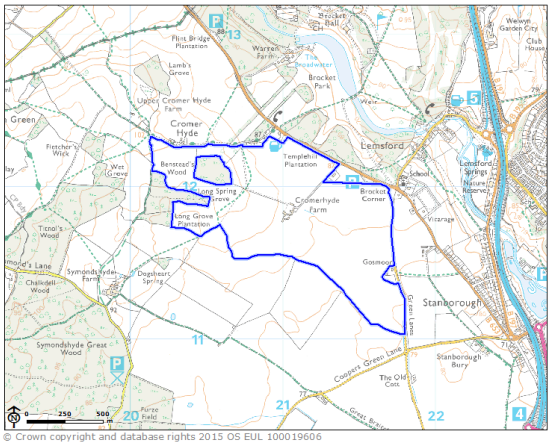
7.13 **Therefore, brick clay site MLPCS013 represents the most appropriate site option for allocation in the Minerals Local Plan.**

Figure 7.1: Site ranking based on the range and severity of likely adverse effects generated by each site

Appendix 1
Site and Preferred Area Proforma

Site Selection Proforma: MLPCS001

Site Information

Site Name: Land at Cromer Hyde Farm		Site ID Number: MLPCS001	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – Strutt and Parker	**Site Visit Date and Time:**	05/07/2016 - Afternoon
Site Area:	103.6ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	211834 521084	**Planning History:**	The site has no relevant planning history.
District:	Welwyn Hatfield		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site falls within Resource Block F of IMAU report 69. This is confirmed by the digital BGS Resource Map which shows the eastern part of site to be underlain by glacio-fluvial sand & gravel, concealed by overlying deposits in the western part of the site. The BGS superficial geology map shows the sand & gravel to be part of the pre-glacial Kesgrave Catchment Subgroup, and confirms that these are overlain in the western part of the site by an overburden of glacial till. The site falls within the Hertfordshire Mineral Resource Block 13.
• Tonnage of Reserves Calculated?	2.4mt	Rough estimate, based only on six pre-existing boreholes The estimated tonnage equates to 1.45 million m^3, which implies an average thickness of 1.48m across the 98-hectare site. IMAU boreholes suggest mineral thickness of up to 10m in this area, averaging 5.4m across IMAU Block F, but highly variable.
• Economic Viability Assessed by Proposer?	No	Infrastructure in place for adjoining site to the south.
• Economic Viability Allows for Mitigation?	Partly allowed for	No impacts expected, but this is simply an assumption based on the fact that the adjoining land has been worked. It does not consider

Criterion	Yes/No	Justification
		what mitigation may have been needed there. But it may be reasonable to assume similar requirements would apply and therefore likely to be affordable.
• Deliverability: operator willing?	Not known	No operator involvement
• Deliverability: landowner willing?	Yes	Proposed by landowner's agent Available within 1-5 years
• Other points to note:	Adjoins Hatfield Quarry Adjoining land to south has been worked for sand & gravel	
Adequacy of Supporting Information	Information is currently inadequate to support the proposed allocation. Limited evidence has been provided of economic viability and impact mitigation, and there has been no operator involvement as yet.	
Suitability for consideration as a Specific Site allocation, on resource grounds	No.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Medium**	The site is located within the Luton Airport Safeguarding Zone.
Ancient Woodland	**High**	The site is located immediately adjacent to two areas of ancient woodland.
Aquifers	**Medium**	The site is located within Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Medium**	The site contains a small area of deciduous woodland and is located within close proximity to a number of other deciduous woodlands (one immediately adjacent to the site).
BMV land	**Medium**	The site is located within Grade 2 and 3 agricultural land, approximately 70% and 30% of the site respectively.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**Low**	The site does not contain nor is it located near to a water body.

Criterion	Score (Impact)	Justification
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Medium**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, due to the openness of the site the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	Approximately 80% of the site is located within Source Protection Zone 3 with the remaining 20% not located within Source Protection Zone.
Heritage designations	**Very High**	The site is partly located within Brocket Hall Registered Park and Garden and is immediately adjacent to four Grade II listed buildings.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Medium**	The site is currently not in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is located immediately adjacent Benstead's Wood and Long Spring and Long Grove Plantation Local Wildlife Sites.
Proximity of allocated residential or built development	**Medium**	The site is located immediately adjacent to Cromer Hyde and approximately 30m to the south of Lemsford. The site is not located within close proximity to or within a site allocation of the Welwyn Hatfield District Local Plan 2005. However, it is immediately adjacent to proposed site allocation SDS6 and approximately 100m to the north of proposed site allocation SDS5 within Welwyn Hatfield's

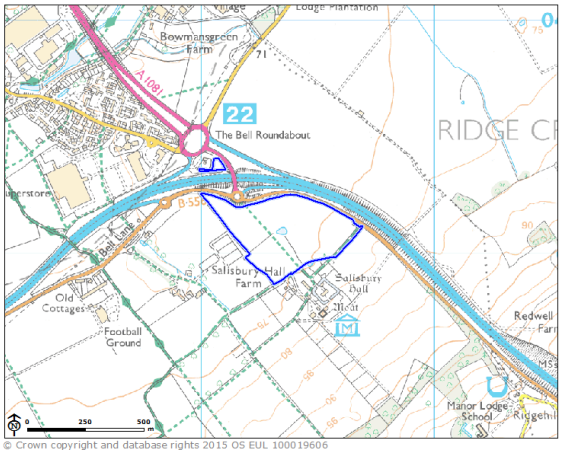
Criterion	Score (Impact)	Justification
		Proposed Submission Local Plan (August 2016).
Recreation	**High**	The site contains a PRoW and is immediately adjacent to a number of other PRoWs. Brocket Park Golf Course is also located to the north of the site.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use.
Sensitive land uses	**High**	The site is located immediately adjacent to Cromer Hyde, Gosmoor and a property which is located on the access to Cromer Hyde Farm. Lemsford is also located approximately 30m north of the site.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Medium**	The site is located within close proximity to the strategic road network (A1 and A414) and is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal[17]		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies significant negative effects against SA objectives 1.1 (biodiversity), 1.3 (air pollution of ecological sites), 2.1 (cultural heritage), 3.1 (landscape), 8.4 (agricultural land) and 9.2 (recreation). This assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments[18]		
The site is considered to have **moderate-high sensitivity** to mineral extraction due to the openness of the site and open views from residential properties adjacent to the site that cannot be mitigated by screen planting without blocking the open views across the wider landscape currently enjoyed by those residents. Mineral workings are likely to be seen by people using the footpath crossing the site. The site is open, particularly to the south and mineral extraction is likely to degrade some valued features, such as the ancient woodland contained within the site and potential severance of the visual link along the lime avenue between Benstead's Wood and Brocket Hall. Although the ancient woodland could be left untouched, extraction could not be screened without changing the characteristic large scale openness of the area and interrupting the visual link along the lime avenue between Benstead's Wood and Brocket Hall. There may be opportunities to improve degraded hedgerows as part of any mitigation scheme.		
Summary of HCC Highways Comments[19]		**Score:**

[17] For the full assessment please see LUC (2016) *Hertfordshire Minerals Local Plan Sustainability Appraisal*
[18] For the full assessment please see LUC (2016) *Hertfordshire Landscape and Visual Sensitivity Study of Potential Mineral Sites*
[19] HCC Highways' detailed comments can be found in **Appendix 2**

Criterion	Score (Impact)	Justification
The site is considered to raise **significant concerns** which are likely to attract highway objections. Over the last five years there have been a total of 12 collisions resulting in slight injuries on Marford Road. Five of these collisions occurred at the intersection of Marford Road and Green Lanes. This indicates there may be existing safety issues at this junction. There have been four collisions on Green Lanes directly adjacent to the site, two of which resulted in slight injuries and two of which resulted in serious injuries. There is a school and church located to east in Lemsford Village. More information is required on the proposed routing of HGV vehicles to assess whether there will be any safety implications for these existing land uses. Detailed analysis and suggested mitigation measures will need to accompany a planning application, in addition to a site specific Transport Assessment.		

Site Selection Proforma: MLPCS002

Site Information

Site Name: Land at Salisbury Hall		Site ID Number: MLPCS002	
			
Site Contact:	Landowner and Operator – Tarmac Aggregates	**Site Visit Date and Time:**	30/06/2016 - Afternoon
Site Area:	14.4ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	203102 519392	**Planning History:**	The site has no relevant planning history.
District:	Hertsmere		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site falls within Resource Block D of IMAU Report 71. This is confirmed by the digital BGS Resource Map which shows the whole site to be within an area of 'concealed glacio-fluvial deposits'. The BGS superficial geology map shows these to be part of the pre-glacial Kesgrave Catchment Subgroup, which is *not* overlain (concealed) by other deposits. The site lies at the feather-edge of the resource and is thus likely to be thinner towards the south-east.
• Tonnage of Reserves Calculated?	860,000t	Tonnage is based on drilling and testing by the operator. The figure equates to 537,500 m^3, which implies an average thickness of 5.1m across the 10.6-hectare area of working. Nearest IMAU borehole suggests 6.8m of mineral below 3.9 m of overburden.
• Economic Viability Assessed by Proposer?	Yes	Informed by borehole investigation & proposal to work as a satellite site to Tyttenhanger.
• Economic Viability Allows for Mitigation?	Yes	Dust and water impacts would be mitigated.
• Deliverability: operator willing?	Yes	Proposed by operator.

Criterion	Yes/No	Justification
• Deliverability: landowner willing?	Yes	Operator is landowner. Available within 11-15 years.
• Other points to note:	Annual output indicated as 500,000 tonnes, so it would be a very short-lived site (2 years proposed), but this is entirely feasible, as mineral would be processed at Tyttenhanger Quarry.	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes: This is a fully viable and properly assessed proposal.	

Sieve 3

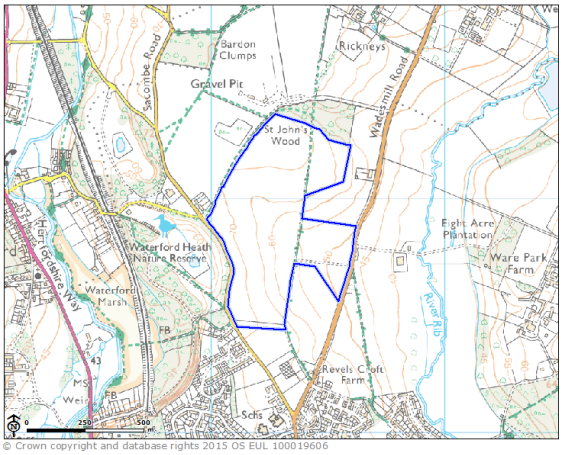
Criterion	Score	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within in close proximity to any areas of ancient woodland.
Aquifers	**Medium**	The site is located within a Secondary A aquifer.
BAP Priority Species or Habitats	**Low**	The site is not located within any BAP habitats or areas to known to include BAP species.
BMV land	**Medium**	Approximately 95% of the site is located within Grade 2 agricultural land with the remaining 5% located within Grade 3 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**High**	The site contains a small water body within its centre.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for

Criterion	Score	Justification
		mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Low**	The site is not located with a Source Protection Zone.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Low**	The site is not located within or immediately adjacent to a Local Nature Reserve or Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located approximately 120m to the south of London Colney and 520m to the east of Old Cottages. The site is not located within close proximity to or within a site allocation of the proposed Hertsmere Site Allocations and Development Management Policies Plan (November 2016).
Recreation	**High**	The site contains a PRoW (No: 027) and is immediately adjacent to a number of other PRoWs (No: 013 and 042). The Watford Football Club Training Ground is located immediately to the west of the site.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use.
Sensitive land uses	**High**	The Watford Football Club Training Ground is located immediately to the west of the site and the Salisbury Hall and other residential properties are located immediately to the south of the site. The Salisbury Lodge Cattery is also located immediately adjacent to the site.
Sustainable transport	**High**	The site is not located within close proximity to

Criterion	Score	Justification
		the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Medium**	The site is located within close proximity to the strategic road network (M25 and A1081) but is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objectives 1.1 (biodiversity protection), 4.1 (water quality), 2.1 (cultural heritage) and 3.1 (landscape) and significant negative effects against SA objective 9.2 (recreation). Therefore this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction due to the lack of valued features and proximity to existing built development and the ability to mitigate impacts which could be achieved through screening. Restoration proposals could also strengthen the existing degraded landscape pattern and hedgerow structure. There are also a limited number of residential properties in the vicinity of the site, of which only two properties along Bell Lane have open views. The impacts of mineral extraction could be mitigated by screening without losing existing visual amenity. Mineral extraction on the site is likely to affect a small number of people using the footpath across the site.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to raise **significant concerns** which are likely to attract highway objections. The A1087/B556 junction has existing capacity problems. It is suggested by the site promoter that HGV transportation would use the B556 and A414 meaning that all HGV movements would be directed through the A1087/B556 roundabout, which serves all the vehicles entering and exiting the Colney Fields Shopping Park. The cumulative impact of the vehicles associated with the site and M25 junction 22 with the vehicles generated by the Colney Fields Shopping Park would need to be assessed to determine whether this routing arrangement is feasible. Detailed analysis and suggested mitigation measures will need to accompany a planning application, in addition to a site specific Transport Assessment.		

Site Selection Proforma: MLPCS003

Site Information

Site Name: Land at Ware Park		Site ID Number: MLPCS003	
			
Site Contact:	Agent – D. K. Symes	**Site Visit Date and Time:**	29/06/16 – Afternoon
Site Area:	35.5ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	5325 2150	**Planning History:**	Two mineral planning applications were submitted in 1990 (3/0959-90) and 1995 (3/1653-95) both of which were withdrawn. The site is currently being considered for mineral extraction under planning application 3/0770-16.
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes (mostly)	Much of the site falls within Resource Block B of IMAU Report 112, but part of it falls outside that area and has no mineral. This is confirmed by the digital BGS Resource Map which identifies the resource as 'glacio fluvial deposits' which are shown as being concealed within the northern part of the site. The BGS superficial geology map shows the deposits to be part of the pre-glacial Kesgrave Catchment Subgroup, which are not overlain (concealed) by other deposits (but which are absent in the eastern part of the site). The majority of site forms part of adopted MLP 2007 Preferred Area 2 and within the Hertfordshire Mineral Resource Block 11.
• Tonnage of Reserves Calculated?	2.6mt	Borehole data has been provided to support the reserve calculation. The estimated tonnage equates to 1.625 million m^3, which implies an average worked thickness of 6.5m across the 25-hectare area of working. IMAU boreholes indicate up to 10.3m of mineral but highly variable.
• Economic Viability Assessed by Proposer?	Yes	Evidenced by details contained within the planning application and Environmental Statement.

Criterion	Yes/No	Justification
• Economic Viability Allows for Mitigation?	Yes	Evidenced by details contained within the Environmental Statement.
• Deliverability: operator willing?	Yes	Ingrebourne Valley Limited (site restoration company which also extracts aggregates).
• Deliverability: landowner willing?	Yes	Proposed by Agent on behalf of landowner. Available within 1-5 years.
• Other points to note:	PP applied for (3/0770-16). Proposed to extract 200,000 – 250,000tpa. High risk of sterilisation by urban expansion if not extracted very soon.	
Adequacy of Supporting Information	Information (including that contained within the planning application and environmental statement) is adequate to support the proposal.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes: This is a fully viable and properly assessed proposal.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**High**	The site is located immediately adjacent to one area of ancient woodland. A second area of ancient woodland is located to the south of the site on the opposite side of Sacombe Road. However, the restoration of the site proposes woodland and a small area of wetland which could have positive effects on ecological connectivity of the woodland. However, this is uncertain as details will not be known until the planning application stage.
Aquifers	**Medium**	The site is located within a Secondary A aquifer.
BAP Priority Species or Habitats	**Positive**	The site is located immediately adjacent to two BAP habitats and a third BAP habitat is located to the south of the site on the opposite side of Sacombe Road. The restoration of the site proposes woodland and a small area of wetland which could have

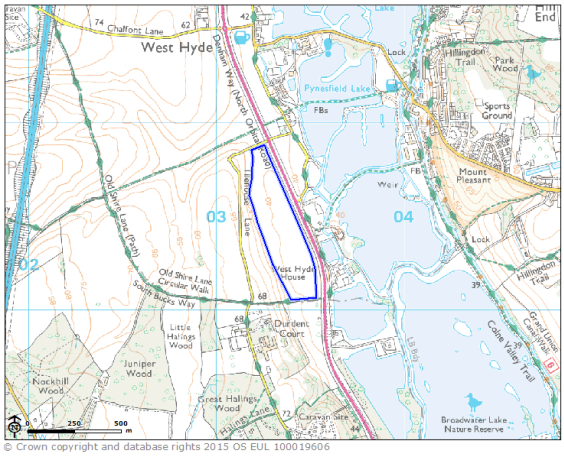
Criterion	Score (Impact)	Justification
		positive effects on nature conservation and BAP priority species and/or habitats. However, this is uncertain as details will not be known until the planning application stage.
BMV land	**Medium**	The whole of the site is located within Grade 3 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites. Rickney's Quarry is located in close proximity; however, this site has been mothballed and is no longer in operation.
Ecological status of water bodies	**Low**	The site is not located near to a water body.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**High**	Approximately 45% of the site is located within Source Protection Zone 1, 20% within Source Protection Zone 2 and 35% within Source Protection Zone 3.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is under option to a mineral operator.
Landscape designations	**Low**	The site is not located within a landscape

Criterion	Score (Impact)	Justification
		designation.
Local Nature Reserves and Local Wildlife Sites	**Positive**	The site is located on the opposite side of the road to the Waterford Heath Local Nature Reserve and immediately adjacent a Local Wildlife Site (Rickney's Quarry) with records of at least one Hertfordshire Red List butterfly species with evidence that the site is suitable to maintain breeding populations. The site is also immediately adjacent to St. Johns Wood (Rickneys Quarry) Local Wildlife Site. However, the restoration of the site proposes woodland and a small area of wetland which could have positive effects on nature conservation. However, this is uncertain as details will not be known until the planning application stage.
Proximity of allocated residential or built development	**Medium**	The site is located immediately to the north of Hertford and approximately 400m to the east of Waterford, 680m south of Crouchfield and 700m west of Ware Park. The site is not located within close proximity to or within a site allocation of the East Herts Local Plan 2007. However, consultation on a new pre-submission version of the Plan took place between November and December 2016. This version of the Plan includes Draft Policy Hert4 – a preferred residential development in close proximity to the site.
Recreation	**High**	The site contains a PRoW (no: 001) in the central eastern area of the site and there are others adjacent to the site including 013 and 003 to the north, 013 to the east and 009 to the south. The site is also located on the opposite side of the road to the Waterford Heath Local Nature Reserve.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use, woodland and a small area of wetland.
Sensitive land uses	**High**	The site is located immediately to the north of Hertford and a number of properties along Sacombe Road. The site is also located approximately 70m to the west of a property along Wadesmill Road.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.

Criterion	Score (Impact)	Justification
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objectives 3.1 (landscape) and 9.1 (health & amenity) and significant negative effects against SA objectives 1.1 (biodiversity), 4.1 (Water), 9.2 (recreation) and 1.3 (air pollution of ecological sites). This assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction as the site is largely enclosed although its openness to the east could result in an adverse impact on the unified rural character of the wider river valley. That said, impacts could be mitigated by screening and extraction operations being set back from the ancient woodland. Residential properties are located to the south, however, views of the site are screened. Properties along Sacombe Road and from the footpath along the western boundary would have views of the site but they could be mitigated through planting.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to require further information/assessments to overcome some highways concerns. The site promoter suggests access directly onto Wadesmill Road with all traffic to and from the north via the A602 – the majority of vehicle movements will be via A10/A602 junction. Wadesmill Road is a numbered classified secondary distributor road with a speed limit of 60mph and a 7.5 tonne weight limit. A solution may be possible through mitigation measures set out in a site specific Transport Assessment that accompanies a planning application. The site was also under consideration for a mineral planning application (3/0770-16), although this has now been refused. Whilst, the application was refused after additional amendments HCC highways did not raise an objection to the proposals subject to conditions.		

Site Selection Proforma: MLPCS004

Site Information

Site Name: Land at Pynesfield		Site ID Number: MLPCS004	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – D. K. Symes	**Site Visit Date and Time:**	30/06/2016 – Afternoon
Site Area:	14.5ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	5035 1905	**Planning History:**	The site has been subject to two minerals planning application one of which were refused (8/0761-13[20])and one of which has now been permitted with conditions (on appeal) (8/1254-15).
District:	Three Rivers		
Mineral to extract:	Sand and Gravel		

[20] Site refused due to sensitive principal aquifer; inappropriate inert infill given location in SPZ1; silt lagoon would be risk to quantity and quality of groundwater; and inappropriate development in the Green Belt.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site falls within an area 'not assessed' on IMAU Report 12, but most (though not all) of the area is identified as a resource ('river terrace deposits') on the digital BGS Resource Map (and as Shepperton Gravel on the BGS superficial geology map).
• Tonnage of Reserves Calculated?	300,000 to 350,000t	Borehole data provided – mineral thickness ranges from 2.6 to 7.7m. .The higher estimated tonnage equates to 218,750 m^3, which implies an average worked thickness of 2.4m across the 9-hectare area of working (allowing for reduced extraction at margins of excavation). The mineral reserve lies principally beneath the water table. No relevant IMAU boreholes are available to compare with this indication.
• Economic Viability Assessed by Proposer?	Yes	Evidenced by planning application. The site would not be viable on its own but would be if worked in conjunction with the nearby quarry at Denham Park Farm. Note that restoration relies upon import of reclamation materials from Denham Park Farm quarry – but this has been allowed for and does not affect economic viability.

Criterion	Yes/No	Justification
• Economic Viability Allows for Mitigation?	Yes	Evidenced by planning application.
• Deliverability: operator willing?	Yes	Ingrebourne / Harleyford Ltd.
• Deliverability: landowner willing?	Yes	Proposed by landowner's Agent. Landowner is part of Wm Boyer & Sons – a mineral operating company- and there is an agreement in place for the land to be worked for minerals. Available within 1 year. Needs to be extracted before sterilisation by HS2.
• Other points to note:	PP applied for (8/1254-15) but refused. Proposed to extract 125,000 tonnes p.a.	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes, although the planning application notes that the site will soon be sterilised by HS2, so the allocation would only be worthwhile if the site can be worked very soon.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity to any areas of ancient woodland.
Aquifers	**Medium**	The site is located within a Secondary A aquifer.
BAP Priority Species or Habitats	**Positive**	The site is not located within any BAP habitats or areas to known to include BAP species. The proposed restoration includes the creation of a wetland sustainable drainage scheme which could have positive effects on BAP priority species and/or habitats. However, this is uncertain as details will not be known until the planning application stage.
BMV land	**Medium**	The whole of the site is located within Grade 2 agricultural land.

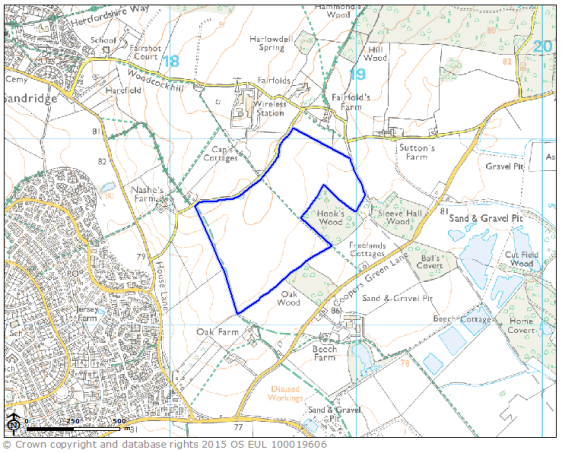
Criterion	Score (Impact)	Justification
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites. However, Denham Park Farm, located in the neighbouring County of Buckinghamshire is in close proximity.
Ecological status of water bodies	**Low**	The site does not contain nor is it located near to a water body.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**High**	The whole of the site is located within Source Protection Zone 1.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Positive**	The site is not located within or immediately adjacent to a Local Nature Reserve or Local Wildlife Site. The proposed restoration includes the creation of a wetland sustainable drainage scheme which could have positive effects on nature conservation. However, this is uncertain as details will not be known until the planning

Criterion	Score (Impact)	Justification
		application stage.
Proximity of allocated residential or built development	**Medium**	The site is located approximately 110m to the south of West Hyde. The site is not located within close proximity to or within a site allocation of the Three Rivers District Local Plan 2014.
Recreation	**Medium**	The site does not contain any PRoW, however, it is located within close proximity to a number of PRoWs (No's: 002 and 004).
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use and a wetland sustainable drainage scheme.
Sensitive land uses	**Medium**	The site is located approximately 85m to the west of a property along Old Uxbridge Road. However, it should be noted that the A412 separates the property from the site.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Low**	The site is located adjacent to the strategic road network (A412) but is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objectives 9.2 (recreation loss) and 3.1 (landscape). In addition, the SA identifies significant negative effects against SA objectives 1.1 (biodiversity protection) and 1.3 (biodiversity air quality effects). Therefore, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction due to the lack of valued features and proximity to existing and potential transport infrastructure. The area is effectively screened by topography to the west and boundary vegetation to the south and east. Impacts could be fully mitigated through screening, particularly along Tilehouse Lane without adversely changing the character of the landscape. There are also very few properties in the vicinity of the site and none have open views of the site. Furthermore, there is no visibility from recreational routes or from the lakes in the Colne Valley.		
Summary of HCC Highways Comments	**Score:**	
The proposed site has **no fundamental highway objection** in principle.		

Criterion	Score (Impact)	Justification
Access to the site is from Tilehouse Lane which has a junction access to the A412. Tilehouse Lane is a rural access lane with narrow width and hedges either side. The A412 is known locally as the North Orbital Road and connects to the M40 and M25. HCC Highways commented on planning application 8/1254-15 (which has since been permitted on appeal) and had no objection subject to conditions regarding vehicle restrictions, the impact of construction vehicles onto the local area and the agreement of a routing agreement being imposed. Mitigation measures identified in a site specific Transport Assessment may still be required though.		

Site Selection Proforma: MLPCS005

Site Information

Site Name: Nashe's and Fairfold's Farm		Site ID Number: MLPCS005	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – D. K. Symes	**Site Visit Date and Time:**	30/06/2016 - Afternoon
Site Area:	40.9ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	5185 2094	**Planning History:**	The site has no relevant planning history.
District:	St. Albans		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	All but the north-west corner of the site falls within Resource Block C of IMAU Report 71. This is confirmed by the digital BGS Resource Map which identifies the material as 'concealed glacio-fluvial resources'. The BGS superficial geology map shows these to be part of the pre-glacial Kesgrave Catchment Subgroup which are not overlain (concealed) by other deposits.
• Tonnage of Reserves Calculated?	1.25mt	No evidence of calculation of reserves. Estimated tonnage equates to 781,250 m^3, which implies an average thickness of 3.1m across the 25-hectare area of working. IMAU Boreholes at edges of site show up to 13m of mineral below up to 2.6m of overburden.
• Economic Viability Assessed by Proposer?	Partly	Reserve is claimed to be large enough to be worked independently or as an extension to nearby Hatfield quarry. But no evidence to back this up.
• Economic Viability Allows for Mitigation?	Partly allowed for	Consideration appears to be limited to the examples given on form. Response to those to be achieved through site design. No other mitigation needs identified. This may be too simplistic – especially in view of the significance of the underlying Chalk aquifer, and needs to be supported by evidence. Additional monitoring/

Criterion	Yes/No	Justification
		mitigation costs might need to be allowed for.
• Deliverability: operator willing?	Yes	Wm. Boyer & Sons Ltd.
• Deliverability: landowner willing?	Yes	Landowner is the operator. Available within 1 – 5 years.
• Other points to note:	Adjacent to Hatfield Quarry & Land at Suttons. Proposed to extract 150,000 – 200,000tpaover a period of about 10 years, or less.	
Adequacy of Supporting Information	Information is currently inadequate to support the proposed allocation. Limited evidence has been provided of environmental impact mitigation. Evidence is also needed to support the reserve calculation. Proposal has been withdrawn.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Proposal has been withdrawn.	

Sieve 3

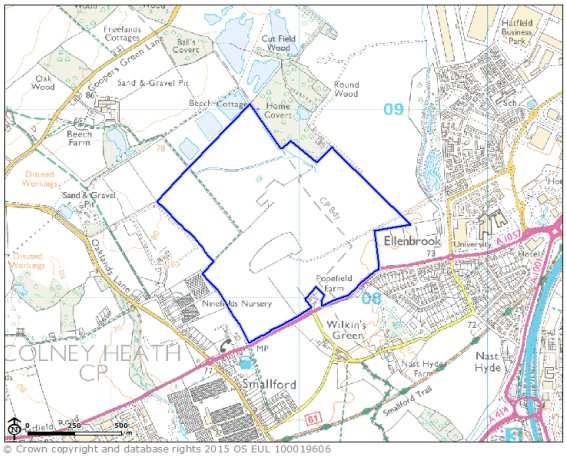
Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Medium**	The site is located within the Luton Airport Safeguarding Zone.
Ancient Woodland	**High**	The site is located immediately adjacent to one area of ancient woodland.
Aquifers	**Medium**	The site is located within a Secondary Undifferentiated aquifer.
BAP Priority Species or Habitats	**Low**	The site is not located within any BAP habitats or areas known to include BAP species.
BMV land	**Medium**	The whole of the site is located within Grade 2 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**Low**	The site does not contain nor is it located near to a water body.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the

Criterion	Score (Impact)	Justification
		planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Medium**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, due to the open nature of the site the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The whole of the site is located within Source Protection Zone 3.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is located immediately adjacent to Oak's Wood and Hook's Wood ancient woodland which are Local Wildlife Sites.
Proximity of allocated residential or built development	**Low**	The site is not located within 250m of an existing settlement nor is it located within close proximity to or within a site allocation of St. Albans District Local Plan 1994 or St. Albans draft Strategic Local Plan 2016.
Recreation	**High**	The site contains a PRoW (No: 020) and is immediately adjacent to a number of other PRoWs including No's 054 and 186.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored principally back to agricultural use.
Sensitive land uses	**Medium**	The site is located on the opposite side of Nashe's Farm Lane where two properties are located.

Criterion	Score (Impact)	Justification
		The site is also located approximately 90m to the north of Oak Farm.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies a minor negative effects against SA objective 2.1 (heritage), 3.1 (landscape), 4.1 (water quality) and 9.4 (aerodrome safety). The SA identifies significant negative effects against SA objectives 1.1 (biodiversity) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above. Site MLPCS005 has since been withdrawn and therefore has not been recommended as a potential site for inclusion in the plan.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **moderate-high sensitivity** to mineral extraction as the site has an open nature, is elevated above the surrounding landscape and the area has a tranquil rural character. That said, some impacts could be mitigated through screening and the landscape structure could be improved through restoration of the hedgerow network. The site is also visible to a large number of residents in the Jersey Farm area of St. Albans. Due to the rising topography of the site, these impacts cannot be fully mitigated.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to raise **significant concerns** which are likely to attract highway objections. The access is proposed either direct to House Lane or via the adjacent Hatfield Quarry. House Lane is a local distributor road subject to a 30mph speed limit and a weight restriction of 7.5 tonnes. House Lane is narrow and not suitable for HGV movements. More information is required for HCC Highways to assess the site including a Transport Assessment detailing the proposed trip generation and the impact on the network (including the routing of HGV movements). Additionally, information on the proposed access arrangement will be required so that HCC Highways can assess its feasibility.		

Site Selection Proforma: MLPCS006

Site Information

Site Name: Hatfield Aerodrome		Site ID Number: MLPCS006	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – SLR Consulting	**Site Visit Date and Time:**	30/06/2016 – Afternoon
Site Area:	86.6ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	208269 519951	**Planning History:**	Part of the site has been subject to four mineral planning applications, two of which were refused (6/0299-78[21] and 5/0620/78[22]) and two of which were withdrawn (6-0221-81 and 5/0509-81). The site is currently being considered for mineral extraction under planning application 5/0394-16.
District:	St. Albans and Welwyn Hatfield		
Mineral to extract:	Sand and Gravel		

[21] Site refused due to the land falling within an agricultural priority area – Grade 1 and Grade 2 in the Agricultural Land Classification.
[22] No decision notice, although the decision for 6/0299-78 also refers to 5/0620-78.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	Yes	A small wedge along the northern boundary of the site has been worked. However, as it's so small it is not considered to be a constraint to the extraction of mineral from this site.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The eastern side of the site falls within Resource Block A of IMAU Report 67, whilst the western side falls within Resource Block C of IMAU Report 71 (effectively a continuation of the same resource). This is confirmed by the digital BGS resource map which shows virtually the whole of the site to be within an area of 'concealed glacio-fluvial deposits', overlain (along a former watercourse) by 'sub-alluvial river terrace deposits'. The BGS superficial geology map indicates the main, lower resource to be part of the pre-glacial Kesgrave Catchment Subgroup, overlain ('concealed') in this area by glacial till. The site falls within the Adopted MLP 2007 Preferred Area 1 and the Hertfordshire Mineral Resource Block 15.
• Tonnage of Reserves Calculated?	8mt	No calculations supplied – but borehole logs are provided in Appendix 6-1 of the Environmental Statement, confirming two layers of sand & gravel with intervening layer of clayey interburden. The estimated tonnage equates to 5.0 million

Criterion	Yes/No	Justification
		m^3, which implies an average worked thickness of 10.0 m across the 50-hectare area of working. This may be optimistic given that IMAU Boreholes indicate 6.7 to 9.5 m of glacio-fluvial sand & gravel below 0.6 to 5.4m of overburden (glacial till). Most of the reserve lies below the water table.
• Economic Viability Assessed by Proposer?	Yes	Evidenced by planning application. Restoration dependent on import of inert waste, but this is allowed for.
• Economic Viability Allows for Mitigation?	Yes	Evidenced by planning application.
• Deliverability: operator willing?	Yes	Brett Aggregates.
• Deliverability: landowner willing?	Yes	Operator has an option to lease the land. Available within 1 – 15+ years.
• Other points to note:	Currently an allocated site in the 2007 MLP. PP applied for (5/0394-16). Proposed to extract approx. 250,000 tpa over 30 years.	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes: This is a fully viable and properly assessed proposal.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Medium**	The site is located within the Luton Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity to any areas of ancient woodland.
Aquifers	**Medium**	The site is located within Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Positive**	The site contains deciduous woodland and additional habitats. However, the proposed restoration includes

Criterion	Score (Impact)	Justification
		the creation of grassland and wetland which could have positive effects on BAP priority habitats and/ or species. However, this is uncertain as details will not be known until the planning application stage.
BMV land	**Medium**	Approximately 70% of the site is located within Grade 2 and 15% is located within Grade 3 agricultural land. The remaining 15% is located within non-agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**High**	The site contains two watercourses.
Flood risk	**Positive**	The site is not located within Flood Risk Zones 3a or 3b. It is however located within Flood Risk Zone 2. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	Approximately 60% of the site is located within a Source Protection Zone 3 with the remaining 40% located within Source Protection Zone 2.
Heritage designations	**Medium**	The site is located immediately adjacent to four Grade II listed buildings.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is under option to a mineral operator.

Criterion	Score (Impact)	Justification
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Positive**	The site is located immediately adjacent to the Home Covert and Round Wood Local Wildlife Site. However, the proposed restoration includes the creation of grassland and wetland which could have positive effects on nature conservation. However, this is uncertain as details will not be known until the planning application stage.
Proximity of allocated residential or built development	**Medium**	The site is located immediately adjacent to Hatfield and Smallford. The site is not located within close proximity to or within a site allocation of St. Albans District Local Plan 1994, St. Albans draft Strategic Local Plan 2016, the Welwyn Hatfield District Local Plan 2005 or the Welwyn Hatfield Proposed Submission Local Plan 2016.
Recreation	**High**	The site contains two PRoW (No's:014 and 015) and is within close proximity of two additional PRoW (No's: 012 and 062) and the Hertfordshire Sports Village. Furthermore, the site is used for informal recreation.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored to a combination of nature conservation (creation of grassland and wetland) and public open space (country park).
Sensitive land uses	**High**	The site is located immediately adjacent to Hatfield, Smallford and Popefield Farm.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Low**	The site is located immediately adjacent to the strategic road network (A1057) but is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objectives 2.1 (heritage), 4.1 (Water) and 9.4 (aerodrome safety) and significant negative effects against SA objective 1.1 (biodiversity protection), 1.3 (Biodiversity and air quality), 8.4 (agricultural land) and 9.2 (recreation). In	

Criterion	Score (Impact)	Justification
	addition, the SA also identifies a minor positive effect (with some uncertainty) against SA objective 6.2 (flood alleviation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	

Summary of Landscape and Visual Sensitivity Comments

The site is considered to have **low-moderate sensitivity** to mineral extraction due to its former industrial use. The area is flat and heavily screened and post-operation restoration could improve the existing landscape character.

The boundary vegetation screens the site from the small number of properties within the vicinity of the site. Any impacts can be fully mitigated through screening without an adverse impact on visual amenity.

Summary of HCC Highways Comments **Score:**

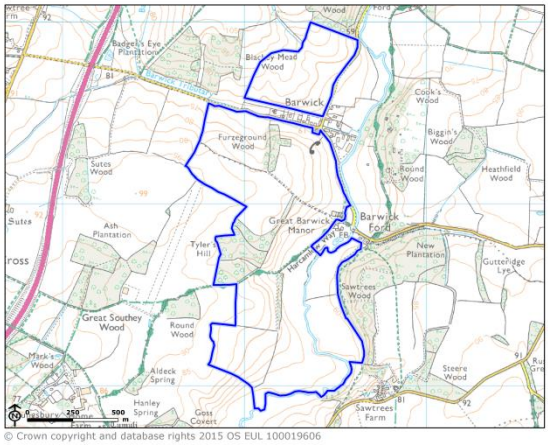
The site is considered to require further information/assessments to overcome **some highways concerns**.

The site is currently subject to a minerals planning application (5/0394-16) and the site promoter has stated that the majority of HGV traffic would route to the east towards the A1(M). Access would be on to the A1057 and it is understood that a Road Safety Audit (RSA) is being undertaken. HCC Highways will provide further comment on the application once the RSA has been submitted and reviewed. The Hatfield Road/Comet Way junction has been identified as a congestion hotspot and the Hatfield Road/Ellenbrook Road junction has also been flagged up as a potential problem location.

A solution may be possible through mitigation measures set out in a site specific Transport Assessment that accompanies a planning application.

Site Selection Proforma: MLPCS007

Site Information

Site Name: Barwick		Site ID Number: MLPCS007	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Landowner	**Site Visit Date and Time:**	29/06/2016 - Afternoon
Site Area:	120.3 ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	218817 538112	**Planning History:**	Part of the site has been subject to a number of planning applications for mineral extraction. Four of which were refused (E-2097-66[23], E-1950-64[24], E-1572-70[25] and E/2493-65[26]), one of which was permitted (E/1387-56) and one of which was withdrawn (E/1531-60).
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

[23] Site refused due to its location forming an attractive feature of the Rib Valley; gravel extraction would destroy the hillside and land formation which subsequent tree planting would not restore; the gravel workings, plant and machinery could not effectively screened from view; the rural character of local roads and the character and setting of Barwick Ford would be adversely effected by their use, the gravel lorries and associated congestion; and there is insufficient evidence to show that there is a demand for this material which cannot be adequately met by other sources.

[24] Same reasoning as application: E-2097-66.

[25] Same reasoning as application: E-2097-66.

[26] Same reasoning as application: E-2097-66.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Partly	Some areas within the western and central parts of the site fall within Resource Block B of IMAU Report 112, whilst areas within the eastern part of the site fall within Resource Block C of the same report, with significant intervening areas of non-mineral. Note that the eastern areas are now excluded from the revised proposal. The resource areas are confirmed by the digital BGS Resource Map which shows these to be mostly glacio-fluvial deposits, concealed in places, and overlain by more recent 'sub-alluvial river terrace deposits beneath the floodplain of the River Rib, which bisects the site from north to south. The more detailed BGS superficial geology map confirms the lower resource to be glacio-fluvial sand & gravel which is overlain in places and interbedded in others with glacial till deposits. Areas of non-mineral largely correspond to deposits of glacio-lacustrine clay and silt. The site falls partly within the Hertfordshire Mineral Resource Block 9.
• Tonnage of Reserves Calculated?	Estimated at 5mt	No boreholes have been drilled, reserve estimate is based only on applicant's experience. IMAU boreholes in western part indicate up to 6.4 m of glacio-fluvial sand & gravel beneath up to 10.6m of overburden (glacial till).

Criterion	Yes/No	Justification
		IMAU boreholes in eastern part indicate much thicker deposits (8.4 to 11.6m of sand & gravel beneath much thinner or no overburden), but those resources are now excluded from the new boundary.
• Economic Viability Assessed by Proposer?	No	Very limited consideration has been given – no details of resource assessment and no operator involvement, although restoration would not be dependent on landfilling.
• Economic Viability Allows for Mitigation?	No	No impacts anticipated but no studies yet done. Original form states only that studies and advice from an aggregates operator would be required.
• Deliverability: operator willing?	Not known	No operator yet involved.
• Deliverability: landowner willing?	Yes	Proposed by landowner's employee.
• Other points to note:	Part of site previously permitted (E/1387-56).	
Adequacy of Supporting Information	Information is currently inadequate to support proposed allocation. Limited information has been provided.	
Suitability for consideration as a Specific Site allocation, on resource grounds	No.	

Sieve 3

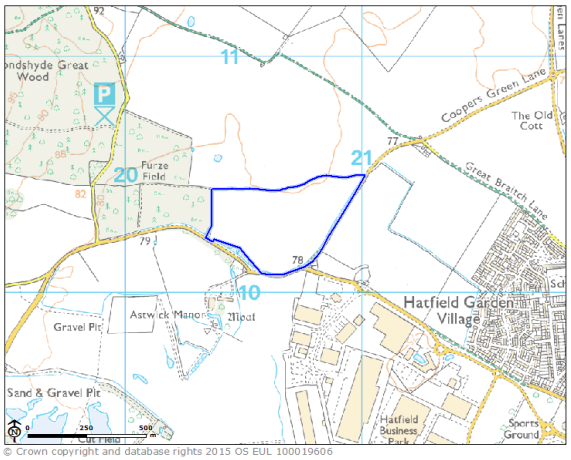
Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**High**	The site is immediately adjacent to an area of ancient woodland.
Aquifers	**Medium**	The site is located with Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Medium**	The site contains two areas of deciduous woodland and one area of additional BAP habitat. The site is also located immediately adjacent to additional areas of deciduous woodland.
BMV land	**Medium**	The majority of the site is located within Grade 3 agricultural land with the remaining part

Criterion	Score (Impact)	Justification
		located in Grade 2.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**High**	The site contains one watercourse within the site, the River Rib.
Flood risk	**Positive**	There are areas of Flood Zone 2 within this site. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is not located within the Green Belt.
Groundwater vulnerability	**High**	The site lies within SPZ1 and SPZ2.
Heritage designations	**Medium**	The site is located immediately adjacent to two Grade II* and four Grade II listed buildings.
International and national ecological designations	**High**	The site is immediately adjacent to Plashes Wood SSSI.
Land ownership	**Medium**	The site is currently not in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is located within Great Barwick Manor Area Local Wildlife Site. The site is also immediately adjacent to Sawtrees Wood & New Plantation Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located immediately adjacent to Barwick. The site is not located within close proximity to or within a site allocation in East Hertfordshire's Local Plan 2007.
Recreation	**High**	The site contains two PRoW including No's 045 and 060 and is immediately adjacent to a number of other PRoWs including 011 and 062.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored to agriculture, if

Criterion	Score (Impact)	Justification
		appropriate.
Sensitive land uses	**High**	The site is located immediately adjacent to Barwick and properties immediately north of Sawtrees ancient woodland (also within close proximity to Barwick Ford).
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Medium**	The site is located approximately 680m to the east of the strategic road network (A10) but is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies a minor negative effect against SA objective 2.1 (heritage), 7.1 (recycling), 8.4 (agricultural land) and 9.1 (health and wellbeing). Significant negative effects were identified against SA objectives 1.1 (biodiversity protection), 1.3 (biodiversity air quality effects), 4.1 (water), 9.2 (recreation) and 3.1 (landscape). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **moderate-high sensitivity** to mineral extraction due to the varied landform and land cover pattern and its sense of tranquillity. Mineral operations are likely to adversely affect the distinctive rural character of the area. There are also a number of local residents who will have open views of the site and users of the network of footpaths that cross or run adjacent to the site will also have views. Impacts cannot be fully mitigated without blocking views over the site which are currently enjoyed by the residents and footpath users.		
Summary of HCC Highways Comments	**Score:**	
The site has **not been assessed by HCC Highways** as no information has provided on the proposed access points or HGV routing. Further detailed analysis will need to be provided in a Transport Assessment detailing the proposed trip generation and the impact on the network (including HGV routing). Additionally, information on the proposed access arrangement will be required so that HCC can assess its feasibility.		

Site Selection Proforma: MLPCS008

Site Information

Site Name: Hatfield – Furze Field		Site ID Number: MLPCS008	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Landowner and Operator – Cemex UK Operations Ltd	**Site Visit Date and Time:**	05/07/2016 – Afternoon
Site Area:	17.3	**Attendees:**	Jonny Hill
Central Grid Ref.:	520050 210408	**Planning History:**	Part of the site has been approved for mineral extraction under planning permissions 6/0439-03 and 6/1430-10.
District:	Welwyn Hatfield		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site falls within an area of concealed resources, in Resource Block F of IMAU Report 69. This is confirmed by the digital BGS Resource Map which indicates concealed glacio-fluvial deposits across the whole of the site. The BGS superficial geology map indicates that those deposits are part of the pre-glacial Kesgrave Catchment Subgroup and that they are overlain, throughout the site, by an overburden of glacial till. The site falls within the Hertfordshire Mineral Resource Block 13.
• Tonnage of Reserves Calculated?	532,000t	No calculations or borehole data provided but the stated reserves equate to 326,875 m^3, which implies an average workable thickness of only 1.98m across the 16.5-hectare area of working. (This tallies with the extraction being limited to only the upper gravels, above the water table – see below). An IMAU borehole adjoining the site indicates a full mineral thickness of 7.4m beneath 3.2m of overburden. This and other boreholes across IMAU Block F indicate an average mineral thickness of 5.4m, but this is highly variable and may include mineral beneath the water table.

Criterion	Yes/No	Justification
• Economic Viability Assessed by Proposer?	Yes	The site is proposed by a commercial operator (CEMEX UK) as a remote extension to their existing operation at Symondshyde, utilising their existing plant site located off Oaklands Lane. The site would be connected via an existing conveyor system beneath Coopers Green Lane.
• Economic Viability Allows for Mitigation?	Yes	Based on experience from their existing operations at Symondsgide, the operator considers that the site can be worked with limited environmental impact and would only work the upper gravels, to protect the groundwater.
• Deliverability: operator willing?	Yes	(CEMEX UK).
• Deliverability: landowner willing?	Yes	Land is owned by operator and would be available within the next 1 to 5 years, to succeed the existing operations at Symondshyde.
• Other points to note:	Adjoins Hatfield Quarry Planning application expected	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes: This is a fully viable and properly assessed proposal.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Medium**	The site is located within the Luton Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity of any areas of ancient woodland.
Aquifers	**Medium**	The site is located within a Secondary Undifferentiated Aquifer.
BAP Priority Species or Habitats	**Low**	The site is not located within any BAP habitats or areas to known to include BAP species.
BMV land	**Medium**	Approximately 80% of the site is located within Grade 2 agricultural land with the remaining

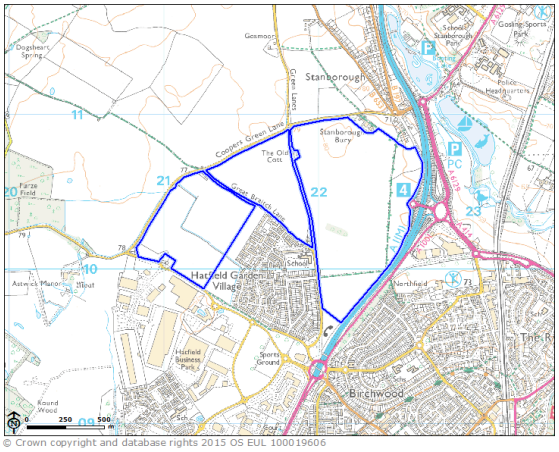
Criterion	Score (Impact)	Justification
		20% located in non-agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**Medium**	The site is immediately adjacent to watercourses on all sides.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The site is located within Source Protection Zone 3.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is located immediately adjacent to the Furzefield Wood Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located immediately adjacent to Hatfield and approximately 40m north of Astwick Manor. The site is not located within or in close proximity to a site allocation in the Welwyn Hatfield District Local Plan 2005. However, the

Criterion	Score (Impact)	Justification
		site is located within site allocation GTLAA09 and immediately adjacent proposed site allocation SDS5 of Welwyn Hatfield's Proposed Submission Local Plan (August 2016). It is understood that there is an agreement between Welwyn Hatfield District Council and the mineral operator to extract any mineral resource from the site prior to the development of GTLAA09.
Recreation	**Medium**	The site is located approximately 20m north of a PRoW.
Restoration	**Medium**	Once mineral extraction has finished onsite the land will be restored to 'landscaped conservation'. However, it is uncertain whether this would be a high quality restoration.
Sensitive land uses	**High**	The site is located immediately adjacent to Hatfield and approximately 40m north of Astwick Manor. The site is across Coopers Green Lane from a property which is located at the apex of Hatfield Avenue and Coppers Green Lane. The area of Hatfield the site is adjacent to is industrial/warehousing and not considered to be a sensitive land use.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area. However, it is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objective 9.4 (aerodrome safety), 9.2 (recreation loss), 3.1 (landscape) and 4.1 (water quality). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction due to the flat landform and simple land cover pattern. There could be a slight adverse impact on the perceptual character of the landscape but the area is screened and impacts could be mitigated by woodland screening along the boundary and setting mineral extraction back from the ancient woodland. Woodland along the southern boundary will screen views from residential properties to the south and trees along the northern boundary will filter views from the footpath north of the site.		

Criterion	Score (Impact)	Justification
Impacts could be fully mitigated by screen planting.		
Summary of HCC Highways Comments		**Score:**
The site is considered to require further information/assessments to overcome **some highways concerns**. There is an existing access off Oaklands Lane. The site promoter proposes to extend the existing conveyor system to transport the minerals under Coopers Green Lane to the existing plant site located off Oaklands Lane. However, no information has been provided regarding the onward distribution of the minerals. Information on the proposed trip generation and trip distribution is required so that HCC Highways can assess what impact the additional HGV movements would have on the network. A solution may be possible through mitigation measures set out in a site specific Transport Assessment that accompanies a planning application.		

Site Selection Proforma: MLPCS009

Site Information

Site Name: Hatfield Quarry – Land adjoining Coopers Green Lane		Site ID Number: MLPCS009	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Landowner and Operator – Cemex UK Operations Ltd	**Site Visit Date and Time:**	05/07/2016 – Afternoon
Site Area:	124.5	**Attendees:**	Jonny Hill
Central Grid Ref.:	210574 521685	**Planning History:**	The site has no relevant planning history.
District:	Welwyn Hatfield		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site falls within an area of mostly concealed resources, in Resource Block F of IMAU Report 69. This is confirmed by the digital BGS Resource Map which indicates mostly concealed glacio-fluvial deposits across the whole of the site. The BGS superficial geology map indicates those deposits to be part of the pre-glacial Kesgrave Catchment Subgroup and shows that they are overlain (concealed), except in the north-eastern part of the site, by an overburden of glacial till. The site falls within the Hertfordshire Mineral Resource Block 13.
• Tonnage of Reserves Calculated?	6.6mt	No calculations or borehole data provided but the stated reserves equate to 4.125 million m^3, which implies an average workable thickness of 5.57m across the anticipated 74-hectare area of working. (This tallies with the extraction being limited to only the upper gravels, above the water table – see below). IMAU boreholes within and adjoining the site indicate mineral thicknesses of 9.6 to 14.5m beneath only 0.8m of overburden, but with total interburden thicknesses of up to 4.9m. This and other boreholes across IMAU Block F indicate an average mineral thickness of 5.4m, but this is highly variable.

Criterion	Yes/No	Justification
• Economic Viability Assessed by Proposer?	Yes	The site is proposed by a commercial operator (CEMEX UK) as a further extension to their existing operation at Hatfield Quarry, utilising their existing plant site via a conveyor system.
• Economic Viability Allows for Mitigation?	Yes	Based on experience from their existing operations at Hatfield Quarry, the operator considers that the site can be worked with limited environmental impact and would only work the upper gravels, to protect the groundwater.
• Deliverability: operator willing?	Yes	(CEMEX UK).
• Deliverability: landowner willing?	Yes (negotiation ongoing)	The land is partly owned by the operator and partly in negotiation as an option for working. The site would be available within the next 1 to 5 years, to succeed the proposed Furze Field extraction area.
• Other points to note:	Adjoins Hatfield Quarry. The proposal is for the site to be worked at a rate of 400,000 to 600,000tpa over a period of 14 years – a substantial operation.	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes: This is a fully viable and properly assessed proposal.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Medium**	The site is located within the Luton Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity of any areas of ancient woodland.
Aquifers	**Medium**	The site is located within a Secondary Undifferentiated aquifer.
BAP Priority Species or Habitats	**Positive**	The site is located immediately adjacent to one area of deciduous woodland. The proposed restoration includes the creation of wetland which could have positive effects on BAP priority habitats and/ or species.

Criterion	Score (Impact)	Justification
		However, this is uncertain as details will not be known until the planning application stage.
BMV land	**Medium**	Approximately 60% of the site is located within Grade 2 agricultural land, 30% in non-agricultural land and 10% is in Grade 3 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**High**	The site contains one watercourse and is adjacent to an additional watercourse.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	Approximately 95% of the site is located within Source Protection Zone 3 with the remaining 5% located in Source Protection Zone 2.
Heritage designations	**Medium**	The site is immediately adjacent to one Grade II listed building.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	Part of the site is in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Low**	The site is not located within or immediately adjacent to a Local Nature Reserve or Local

Criterion	Score (Impact)	Justification
		Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located immediately adjacent to Hatfield and Stanborough. The site is not located within or in close proximity to a site allocation in the Welwyn Hatfield District Local Plan 2005.However, the site is located within site allocation SDS5 of Welwyn Hatfield's Proposed Submission Local Plan (August 2016). The proposed policy for this site (SP22) states that the developer must demonstrate the extent of the mineral onsite and the likelihood of extraction prior to the development of the site, therefore ensuring that any viable mineral resource is extracted first.
Recreation	**High**	The site contains two PRoW (no: 034 and 037) in the eastern section of the site and there are others located adjacent to the site (033, 041 and 042). The site is also immediately adjacent to two designated areas of open space.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored to agriculture, with some wetland conservation. It is also suggested that a landform that would not prejudice potential future residential development would also be restored.
Sensitive land uses	**High**	The site is located immediately adjacent to Hatfield, Stanborough, The Old Cottage along Green Lanes, a number of properties along Great Braitch Lane and a property off Hatfield Avenue. It is also approximately 40m to the east of a property located at the junction of Hatfield Avenue and Coopers Green Lane.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Low**	The site is located immediately adjacent to the strategic road network (A1(M)) and is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage), 3.1 (landscape), 4.1 (water quality) and 9.4 (aerodrome safety) and a significant negative	

Criterion	Score (Impact)	Justification
	effect against SA objective 1.1 (biodiversity protection), 1.3 (biodiversity air quality effects), 8.4 (agricultural land) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	

Summary of Landscape and Visual Sensitivity Comments

The site is considered to have **moderate sensitivity** to mineral extraction due to the flat landform and simple land cover pattern and the levels of existing development along the A1(m) corridor. Although the site is enclosed by high hedgerows along Cooper's Green Lane, properties on the edge of Hatfield Garden Village has views of the site. Some of the impacts could be mitigated through woodland planting to the north of Hatfield Garden Village.

Summary of HCC Highways Comments **Score:**

The site is considered to require further information/assessments to overcome **some highways concerns**.

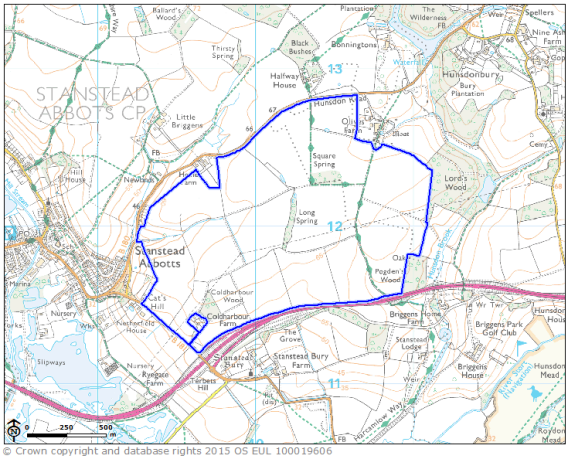
There is an existing access off Oaklands Lane. The site promoter proposes to extend the existing conveyor system to transport the minerals under Coopers Green Lane to the existing plant site located off Oaklands Lane.

Information on the proposed trip generation and trip distribution is required so that HCC Highways can assess what impact the additional HGV movements would have on the network.

A solution may be possible through mitigation measures set out in a site specific Transport Assessment that accompanies a planning application.

Site Selection Proforma: MLPCS010

Site Information

Site Name: The Briggens Estate		Site ID Number: MLPCS010	
			
Site Contact:	Agent - Savills	**Site Visit Date and Time:**	14/07/2016 – Morning
Site Area:	187.75	**Attendees:**	Jonny Hill
Central Grid Ref.:	5400 2120	**Planning History:**	The site has no relevant planning history.
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes, mostly	The site straddles the boundary between Resource Block C of IMAU Report 112 and Resource Block B of IMAU report 46. The latter includes a significant area, within the north-eastern quadrant of the site, where the resource is shown to be overlain by 'excessive overburden'. The resource areas, and the area of excessive overburden, are confirmed by the digital BGS Resource Map. This shows the resource to comprise glacio-fluvial deposits – exposed in parts of the west but concealed over most of the site. The BGS superficial geology map indicates the resource deposits to be part of the pre-glacial Kesgrave Catchment Subgroup, in the west (but possibly of glacio-fluvial origin in the east) and shows that they are overlain, in most areas, by an overburden of glacial till.
• Tonnage of Reserves Calculated?	10.7mt	Reserve calculation is based on a comprehensive exploratory investigation carried out by Tarmac. The reserve, which excludes the area of excessive overburden equates to 6.7 million m^3 which implies an average mineral thickness of 5.97m across the 112-hectare site. IMAU boreholes within and at the edges of the site indicate 2.2 to 14.6m of sand & gravel beneath 1.5 to 14m of overburden.

Criterion	Yes/No	Justification
• Economic Viability Assessed by Proposer?	Yes	Ground investigation has confirmed the area of excessive overburden thickness which will be used as the location of the plant site. The reserve calculation excludes that area.
• Economic Viability Allows for Mitigation?	Yes	Proposal acknowledges that there is a minor perched aquifer within the gravel deposit, but that dealing with this will not have any significant impact on the extraction.
• Deliverability: operator willing?	Yes	Tarmac.
• Deliverability: landowner willing?	Yes (negotiation ongoing)	Terms for an Option Agreement are being finalised. Site will be available within 1-5 years.
• Other points to note:	It is proposed to work the site at a rate of 500,000tpa over a period of 22 years – a very substantial operation.	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes: This is a fully viable and properly assessed proposal.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not within an Airport Safeguarding Zone.
Ancient Woodland	**High**	The site is immediately adjacent to Lords Wood Ancient Woodland.
Aquifers	**Medium**	The site is located within Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Positive**	The site contains two areas of deciduous woodland and is immediately adjacent to two additional areas of deciduous woodland. However, the proposed restoration includes the creation of land for nature conservation which could have positive effects on BAP priority habitats and/ or species. However, this is uncertain as details will not be known until the planning application stage.

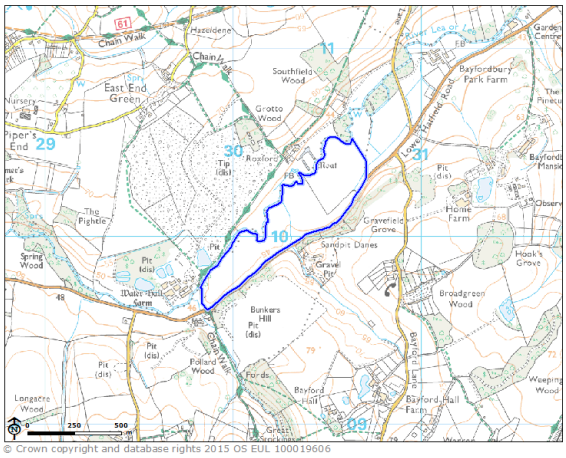
Criterion	Score (Impact)	Justification
BMV land	**Medium**	Approximately 60% of the site is located within Grade 2 agricultural land with 40% located within Grade 3 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**High**	The site contains one watercourse and a number of small water bodies.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	Approximately 50% of the site is located within Source Protection Zone 2, 35% located within Source Protection Zone 3 and 15% is not located within any Source Protection Zone.
Heritage designations	**Medium**	The site is located immediately adjacent to Stanstead Abbotts Conservation Area and across the B181 from four Grade II listed buildings. The site is also adjacent to Olives Farm which contains four Grade II listed buildings and one Grade II* listed building.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The terms for an option agreement with a mineral operator are being finalised.
Landscape designations	**Low**	The site is not located within a landscape

Criterion	Score (Impact)	Justification
		designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is immediately adjacent to Lord's Wood Key Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located immediately adjacent to Hunsdon Road Cottages and approximately 110m east of Stanstead Abbotts. The site is not located within or in close proximity to a site allocation within the East Hertfordshire Local Plan 2007.
Recreation	**High**	The site contains three PRoW (No's:002, 020 and 023). In addition, PRoW 022 is adjacent to the site.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored to agriculture, forestry and land to improve biodiversity.
Sensitive land uses	**High**	The site is located immediately adjacent to Hunsdon Road Cottages and surrounds Coldharbour Farm. The site is also located immediately adjacent to Home Farm, Olives Farm and properties along Cat's Hill. The site is also on the opposite side of the B181 where a number of additional properties are located.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Low**	The site is located immediately adjacent to the strategic road network (A414) and is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objectives 4.1 (water) and 3.1 (landscape) and significant negative effects against SA objectives 1.1 (biodiversity), 1.3 (biodiversity air pollution effects), 2.1 (heritage), 8.4 (agricultural land) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction due to the gently undulating landform and its enclosure by both topography and existing vegetation. Impacts could be mitigated by safeguarding valued features within the site such as existing mature tree and woodland coppices. Post-operation restoration could provide the opportunity to increase the		

Criterion	Score (Impact)	Justification
quality of the hedged field boundaries. Although there is a very limited number of properties with open views over the site, the impacts of mineral extraction could be mitigated by screening without losing their existing visual amenity. Impacts on recreational users of the Harcamlow Way could be mitigated by woodland screening or a diversion of the footpath. Any impacts on visual amenity could be fully mitigated with woodland planting.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to require further information/assessments to overcome **some highways concerns**. The site is located immediately north of the A414 and the site promoter states that access is anticipated to taken via the B181 and HGV movements directed to the A414. The B181 is frequently congested in the southbound direction and the positioning of the access arrangements would need careful consideration. Additionally, discussions with HCC Highways Network Management would be required regarding the HGV route and weight restrictions on the network. Detailed analysis and suggested mitigation measures will need to accompany a planning application, in addition to a site specific Transport Assessment.		

Site Selection Proforma: MLPCS011

Site Information

Site Name: Water Hall Quarry – Farm Fields Area		Site ID Number: MLPCS011	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – Terra Consult	**Site Visit Date and Time:**	29/06/2016 – Morning
Site Area:	24.3ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	529900 209800	**Planning History:**	The site has been subject to five minerals planning applications four of which were refused (E/1246-67[27], E/0827-68[28], 3/0531-74[29] and 3/1236-01[30]) and one of which was withdrawn (3/0464-94).
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

[27] Site refused on the grounds that the excavation of this valley floor would destroy the present scenic character of a particularly attractive reach of river and would be detrimental to the amenity of the area generally. In addition, there is no overriding need of the sand and gravel industry as a whole which would justify the granting of consent.

[28] Same reasoning as application E/1246-67.

[29] Same reasoning as application E/1246-67. Refusal appealed.

[30] Site refused on the grounds that the proposal would not conserve the landscape of the Lea Valley; limit the capacity of the floodplain and increase the risk of flooding elsewhere; is premature and would prejudice the outcome of the Hertfordshire Minerals Local Plan Review; the proposed landform is not natural in appearance and does not sit harmoniously within the surrounding landscape; the proposal would be intrusive in the local landscape particularly during working, having a detrimental impact upon the setting of Roxford House and the bridge over Roxford Moat, listed buildings and Roxford Moat, scheduled ancient monument.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site falls partly within Resource Block D of IMAU Report 112 and partly within Resource Block B of IMAU Report 67. The resource areas are confirmed by the digital BGS Resource Map which shows sub-alluvial river terrace deposits over most of the site, flanked by (and probably underlain by) older glacio-fluvial deposits. The BGS superficial geology map indicates the sub-alluvial gravels to be part of the post-glacial Kempton Park Gravel Formation and shows the older deposits to be part of the pre-glacial Kesgrave Catchment Subgroup.
• Tonnage of Reserves Calculated?	956,000t	No calculations are provided, although mineral operator seems to be involved and it is likely that an assessment will have been carried out. The indicated tonnage equates to 597,500 m^3, implying an average mineral thickness of 4.15m over the expected 14.4-hectare area of working. An IMAU Borehole close to the site indicates 2.6m of mineral beneath 2.4m of overburden. This is less mineral than indicated by the operator, which is why more evidence on their resource assessment is needed.
• Economic Viability Assessed by Proposer?	Partly (Assumed based on	A mineral operator is involved, (the Agent's client is Water Hall), so it can be assumed that some assessment will have been carried out, but

Criterion	Yes/No	Justification
	industry involvement)	there is no clear evidence of this. Unlike adjoining proposals, this site is not dependent on inert waste to achieve restoration, but there is no evidence to show that the costs of habitat creation and aftercare have been adequately considered~~?~~.
• Economic Viability Allows for Mitigation?	Yes	Consideration has been given to hydraulic continuity between the gravels and the underlying Chalk aquifer, which will require a comprehensive scheme of monitoring and mitigation, and also to the mitigation of dust Impacts and the enhancement of biodiversity.
• Deliverability: operator willing?	Yes	Mineral operator (of the existing Water Hall Quarry has 'overriding mineral working options'.
• Deliverability: landowner willing?	No	Proposal made by site promoter's Agent. Landowner confirmation has been received for part of the site but the site has multiple landownership and no confirmation was received following request from HCC relating to part of the site. Site will be available any time after 1 year.
• Other points to note:	Previous application for this site was refused in 2002 for 6 reasons: 1. Landscape, 2. Flood Risk, 3. Prematurity, 4. Landform, 5, Intrusive in landscape, 6. Impact on setting of historical buildings and ancient monument. The proposal is to extract 170,000 tpa over 5.5 years.	
Adequacy of Supporting Information	Most information is adequate, but confirmation of mineral operator, landowner willingness and evidence of reserve calculation (including proven thickness of mineral) is needed, given that a (single) IMAU borehole suggests only limited thickness. No further evidence was submitted in response to the request for supplementary information.	
Suitability for consideration as a Specific Site allocation, on resource grounds	No – proposer failed to respond to the request for additional information.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity of any areas of ancient woodland.

Criterion	Score (Impact)	Justification
Aquifers	**Medium**	The site is located within a Secondary A aquifer.
BAP Priority Species or Habitats	**Positive**	The site contains one area of deciduous woodland and is immediately adjacent to two other areas of deciduous woodland. Two further areas of deciduous woodland are located on the opposite side of Lower Hatfield Road. However, the proposed restoration includes the creation of two lakes separated by wetland (14.4ha) and the provision on new wildlife habitat (1.5ha) which could have positive effects on BAP priority habitats and/ or species. However, this is uncertain as details will not be known until the planning application stage.
BMV land	**Medium**	The site is entirely located within Grade 3 Agricultural land.
Cumulative effects	**Low**	The site is located immediately adjacent to Waterhall Farm Quarry. However, Waterhall Farm Quarry is inactive with regard to mineral extraction, as such, no cumulative effects are likely. Furthermore, the site has been put forward by the owner of the existing quarry and it is likely that extraction at this site will only commence once works on the existing quarry have been completed, if Waterhall Quarry ever became active again. The site is also within close proximity to Bunkers Hill Quarry but it is currently being restored.
Ecological status of water bodies	**High**	The site contains one watercourse and is immediately adjacent to another watercourse.
Flood risk	**Positive**	The site is located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of

Criterion	Score (Impact)	Justification
		including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	Approximately 85% of the site is located within Source Protection Zone 3 with the remaining 15% not located within any Source Protection Zone
Heritage designations	**Medium**	The site is located immediately adjacent to the Roxford Moated Site Scheduled Monument.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is under option to a mineral operator.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is immediately adjacent to the River Lea Local Wildlife Site.
Proximity of allocated residential or built development	**Low**	The site is not located within or in close proximity to any existing settlements or any site allocations within the East Hertfordshire Local Plan 2007.
Recreation	**High**	The site is located immediately adjacent to a PRoW (No: 074) and is within 100m of three more PRoW (No's: 054, 074 and 254).
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored to two lakes separated by wetland (14.4ha) and new wildlife habitats on adjacent land (11.5ha).
Sensitive land uses	**Medium**	The site is located within close proximity of Roxford and a number of properties located on the opposite side of Lower Hatfield Road.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area, but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		

Criterion	Score (Impact)	Justification
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage), 3.1 landscape), 4.1 (water quality) and 9.2 (recreation) and significant negative effects against 1.1 (biodiversity). In addition, the SA identifies a significant positive effect (with some uncertainty) against SA objective 6.2 (flood alleviation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	

Summary of Landscape and Visual Sensitivity Comments

The site is considered to have **low-moderate sensitivity** to mineral extraction due to the flat landform, the enclosed nature of the site and the proximity to existing mineral extraction sites. Impacts could be fully mitigated by screening and post-extraction restoration could strengthen the character of the river corridor which is adjacent to the site.

There are also a limited number of residential properties within the vicinity of the site and impacts on them could be fully mitigated by screen planting without adversely changing their visual amenity.

Summary of HCC Highways Comments **Score:**

The site is considered to require further information/assessments to overcome **some highways concerns**.

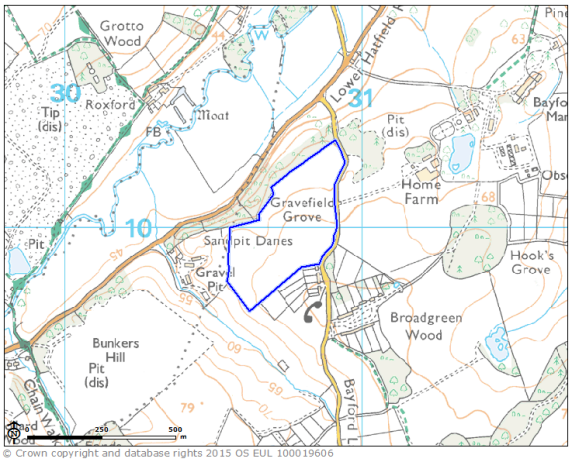
It is stated by the site promoter that minerals can be carried over private land directly to the processing plant at Water Hall Quarry. This being the case, the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past.

The B158/B1455 junction has existing congestion problems. This would require further investigation.

A solution may be possible through mitigation measures set out in a site specific Transport Assessment that accompanies a planning application.

Site Selection Proforma: MLPCS012

Site Information

Site Name: Water Hall Quarry – Broad Green Area		Site ID Number: MLPCS012	
			
Site Contact:	Agent – Terra Consult	**Site Visit Date and Time:**	30/06/2016 – Morning
Site Area:	11.8ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	210001 530723	**Planning History:**	The site has been subject to two mineral planning applications one of which was refused (3/0705-13[31]) and one of which was withdrawn (E/1485-64).
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

[31] Site refused due to the proposal involving working outside of an identified Preferred Area, wherein planning permission for mineral extraction will only be granted when the landbank is below the required level and there is a need for the proposal to maintain the County's appropriate contribution to local, regional and national need that cannot be met from the identified area, and it can be demonstrated that the proposals would not prejudice the timely working of Preferred Areas; or sterilisation of resources will otherwise occur; the application has failed to demonstrate a particular need for the mineral and it is not evident that sterilisation would occur; and the site is located within the Green Belt.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The southern part of the site falls within Resource Block B of IMAU Report 67 whilst the northern part falls within Resource Block D of IMAU Report 112. The resource areas are confirmed by the digital BGS Resource Map, which identifies them as concealed glacio-fluvial deposits. The more detailed BGS superficial geology mapping identifies the resources as part of the pre-glacial Kesgrave Catchment Subgroup, which are overlain (except along the north-western side of the site) by glacial till.
• Tonnage of Reserves Calculated?	450,000t	No calculations are provided, although mineral operator seems to be involved and it is likely that a careful assessment will have been carried out. The indicated tonnage equates to 281,250 m^3, implying an average mineral thickness of 4.02m over the 7-hectare area of working. The nearest IMAU borehole within the same deposit reveals 6.6m of sand & gravel beneath a 5.4m overburden of glacial till.
• Economic Viability Assessed by Proposer?	Yes	Evidenced by previous working of the adjoining site and by virtue of making use of existing plant & infrastructure. The proposal relies partly on inert waste (from the operator's MRF at Water Hall) which should be viable based on recent planning history. No anticipated exceptional

Criterion	Yes/No	Justification
		costs.
• Economic Viability Allows for Mitigation?	Partly allowed for	Some consideration has been given to hydrological issues but no impacts are assumed and no mitigation has been allowed for. Given the significance of the underlying Chalk aquifer and the location of the site within a groundwater source protection zone (3), this may be too simplistic, and additional monitoring/ mitigation costs might need to be allowed for. Allowance has been made for the minimisation of dust and ecological impacts.
• Deliverability: operator willing?	Yes	Mineral operator (of the existing Water Hall Quarry) has 'overriding mineral working options'.
• Deliverability: landowner willing?	Yes	Proposal made by landowner's Agent. Site will be available any time after 1 year.
• Other points to note:	Existing PP (for adjoining site) was granted on appeal in 2014 This proposal is for an extension to that site. It is proposed to extract 150,000tpa over a period of 3 years.	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation. More convincing evidence would be needed at the planning application stage regarding the mitigation of (currently unexpected) potential impacts on groundwater.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity of any areas of ancient woodland.
Aquifers	**Medium**	The site is located within a Secondary Undifferentiated aquifer.
BAP Priority Species or Habitats	**Low**	The site is not located within any BAP habitats or areas to known to include BAP species.
BMV land	**Medium**	The site is located entirely within Grade 3 agricultural land.

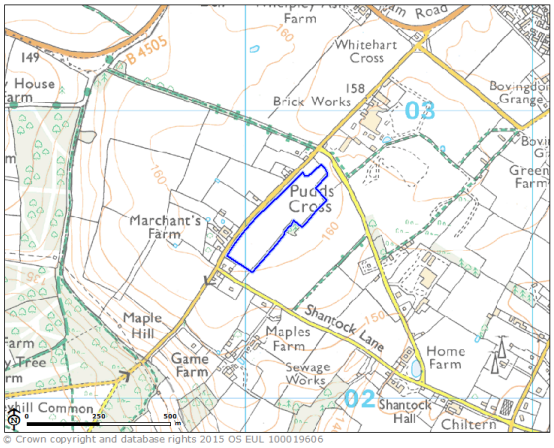
Criterion	Score (Impact)	Justification
Cumulative effects	**Low**	The site is within close proximity to Bunkers Hill Quarry but it is currently being restored.
Ecological status of water bodies	**Low**	The site does not contain nor is it located near to a water body.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery may have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The site is entirely located within Source Protection Zone 3.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is under option to a mineral operator.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Low**	The site is not located within or immediately adjacent to a Local Nature Reserve or Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located immediately adjacent to Broad Green Wood. The site is not located within or in close proximity to a site allocation of the East Hertfordshire Local Plan 2007.

Criterion	Score (Impact)	Justification
Recreation	**Low**	The site does not contain nor is it located within close proximity to any PRoW or recreational facilities.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use.
Sensitive land uses	**High**	The site is located immediately adjacent to Broad Green Wood.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage), 3.1 (landscape) and 4.1 (water quality) and a significant adverse effect against SA objective 1.1 (biodiversity protection). In addition, a minor positive effect is recorded in relation to SA objective 9.3 (recreation provision). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction due to the gently sloping landform, simple land cover pattern and its enclosed nature. The proximity to former and operational mineral sites decreases the rural quality of the immediate area. However, valued features such as the historic field pattern should be safeguarded. There are also few residential properties within the vicinity of the site and only those at Broad Green Wood have open views, which due to the flat nature of the site, could be mitigated without losing existing visual amenity.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to require further information/assessments to overcome **some highways concerns**. The site promoter states that mineral extraction would be carried over private land, through Bunkers Hill Quarry, across Lower Hatfield road directly to the processing plant at Water Hall Quarry. As the minerals will be processed at Water Hall, the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. The B158/B1455 junction has existing congestion problems. This would require further investigation.		

Criterion	Score (Impact)	Justification
A solution may be possible through mitigation measures set out in a site specific Transport Assessment that accompanies a planning application.		

Site Selection Proforma: MLPCS013

Site Information

Site Name: Harry's Field		Site ID Number: MLPCS013	
			
Site Contact:	Agent – Mike Chamley Associates	**Site Visit Date and Time:**	05/07/2016 – Morning
Site Area:	4.6ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	202600 500100	**Planning History:**	The site has no relevant planning history.
District:	Dacorum		
Mineral to extract:	Brick Clay		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site is located within an area of brick clay resources, as identified on the digital BGS Resource Maps. On the BGS superficial geology maps those resources are identified as part of the 'Clay with Flints' deposits which directly overlie and infill solution hollows within the underlying Cretaceous Chalk. The site is directly adjacent to the existing Bovingdon Brick Works and within a continuation of precisely the same deposits.
• Tonnage of Reserves Calculated?	c140,000t	Not assessed in detail. Approximate gross reserve estimated at 70,000 m^3 (equivalent to circa 140,000 tonnes) over the 4 hectare site.
• Economic Viability Assessed by Proposer?	Yes	Operator's proposal.
• Economic Viability Allows for Mitigation?	Yes	Allows for dust control and no groundwater impacts are anticipated, based on the environmental assessment of the adjoining land under planning consent 4/2819-15 (CM0017). No evidence of consideration of other potential impacts.
• Deliverability: operator willing?	Yes	Proposal submitted by Agent for the operator (Bovingdon Brickworks Ltd.)

Criterion	Yes/No	Justification
• Deliverability: landowner willing?	Not known	Same landowner as the Cox & Croft Field site to the south east. Brick-clay extraction would be subject to extending or agreeing a new lease/option with the landowner and any agreements needed for the access route. Timing would be subject to assessing how best to work the site with respect to planning consent 4/2819-15 (CM0017). The site could be a replacement site when Cox & Croft Fields has been exhausted or it may be possible to work adjacent areas concurrently.
• Other points to note:	Planning consent 4/2819-15 (CM0017) for brick-clay extraction on land to south east (Cox & Croft Fields). It is proposed to extract approximately 15,000tpa. As a natural extension to the Cox & Croft Fields site to the south east.	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation. The proposal is informed to a large extent by the detailed assessments carried out in connection with the recently acquired permission for adjoining fields to the South-east. More specific evidence of consideration of impacts on ecology etc. would be helpful but not considered essential at this stage.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes: This is a fully viable and properly assessed proposal. Moreover, the allocation is needed to support the long term future operation of this, the only remaining brickworks site in Hertfordshire. The proposed site is directly adjacent to existing workings and processing facilities.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity to any areas of ancient woodland.
Aquifers	**Low**	The site is not located within an aquifer.
BAP Priority Species or Habitats	**Positive**	The site is located approximately 50m south of one area of deciduous woodland and 70m west of another area of deciduous woodland. The proposed restoration includes ecological restoration which could have positive effects on BAP priority species and/or habitats. However, this is uncertain as details will not be known until the planning application stage.

Criterion	Score (Impact)	Justification
BMV land	**Medium**	Approximately 90% of the site is Grade 2 agricultural land with the remaining 10% located within Grade 3 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**Low**	The site does not contain nor is it located near to a water body.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery may have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The site is entirely located within Source Protection Zone 2.
Heritage designations	**Medium**	The site is located adjacent to Leyhill Road where two Grade II listed buildings are located on the opposite side.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Medium**	The site is not in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Positive**	The site is not located within or immediately adjacent to a Local Nature Reserve or Local Wildlife Site. The proposed restoration includes ecological restoration which could have positive effects

Criterion	Score (Impact)	Justification
		on nature conservation. However, this is uncertain as details will not be known until the planning application stage.
Proximity of allocated residential or built development	**Low**	The site is not located within close proximity to an existing settlement nor is it located within or in close proximity to a site allocation within the Dacorum District Core Strategy 2013 or Dacorum District Draft Site Allocations DPD 2016.
Recreation	**Medium**	The site is located within 100m of two PRoW (No's: 007 and 009).
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored primarily back to agricultural use with associated ecological restoration.
Sensitive land uses	**High**	The site is located immediately adjacent to properties along Shantock Lane. The site is also on the opposite side of Leyhill Road where there are a number of additional properties.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area, but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage) and 3.1 (landscape) and significant adverse effects against SA objective 1.1 (biodiversity protection). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction due to the flat landform and enclosure from hedgerow and hedgerow trees. The site's proximity to existing built development (i.e. existing brickworks and builders merchants' yard) also reduces its sensitivity. Valued features such as the hedgerows and mature trees at the perimeter and the small copse that border the south eastern boundary of the site should be safeguarded. There are few properties within the vicinity of the site and only those on Shantock Lane have open views. Due to the flat landform these impacts could be mitigated by screening without losing existing visual amenity. Furthermore, mitigation planting has recently been planted along the curtilage boundaries. It is considered that impacts on visual amenity could be fully mitigated with woodland screen planting.		

Criterion	Score (Impact)	Justification	
Summary of HCC Highways Comments			**Score:**

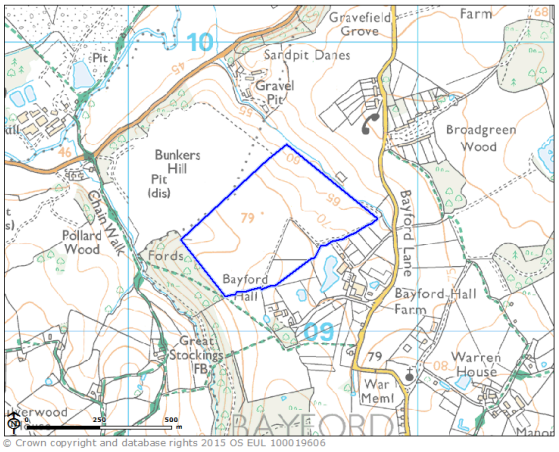
The site is considered to require further information/assessments to overcome **some highways concerns**.

To the southeast of the site there is a site which was subject to a minerals planning application (4/2819-15) and HCC Highways did not object to the development subject to conditions. The site promoter states that the access route constructed under application 4/2819-15 would be used for this site. The access arrangement for this site would therefore be subject to the conditions attached to planning permission 4/2819-15.

Additionally, the site promoter when submitting a planning application would need to provide additional information on the number of HGV movements the site will generate in order to determine the impact of the additional HGV movements on the network and whether the intensification of the proposed access (under 4/2819-15) is acceptable.

Site Selection Proforma: MLPCS014

Site Information

Site Name: Water Hall Quarry – Bunkers Hill South Area		Site ID Number: MLPCS014	
			
Site Contact:	Agent – Terra Consult	**Site Visit Date and Time:**	30/06/2016 – Morning
Site Area:	18.1ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	209397 530439	**Planning History:**	Part of the site was subject to a mineral planning application which was withdrawn (3/0040-99).
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site falls within Resource Block B of IMAU Report 67. The resource area is confirmed by the digital BGS Resource Map, which identifies the material as concealed glacio-fluvial deposits. The more detailed BGS superficial geology mapping identifies the resources as part of the pre-glacial Kesgrave Catchment Subgroup, which are overlain over almost all of the site by glacial till. The site forms a south-easterly continuation of the same deposits which have already been worked at Bunkers Hill (Water Hall).
• Tonnage of Reserves Calculated?	1mt	No calculations are provided, although mineral operator seems to be involved and it is likely that an assessment will have been carried out. The indicated tonnage equates to 625,000m^3, implying an average mineral thickness of 3.86m over the 16.2-hectare area of working. A single IMAU borehole within the site reveals 6.1m of sand & gravel beneath a 10.6m overburden of glacial till.
• Economic Viability Assessed by Proposer?	Partly (Assumed based on industry	A mineral operator is involved, (the Agent's client is Water Hall), so it can be assumed that some assessment will have been carried out, but there is no clear evidence of this. Given the presence of significant overburden within at least

Criterion	Yes/No	Justification
	involvement	part of this site, a critical issue could be the ratio of mineral to overburden, and no evidence has been provided on this. The proposal also relies partly on inert waste (from the operator's MRF at Water Hall) to achieve restoration, which may or may not be viable.
• Economic Viability Allows for Mitigation?	Partly allowed for	Some consideration has been given to water environment issues but no impacts are assumed and no mitigation has been allowed for. The gravels are underlain by London Clay and Lambeth Group clays, silts and sands, rather than directly by the Chalk aquifer, but the site is located within a groundwater source protection zone (3) and additional monitoring/mitigation costs might need to be allowed for. Some allowance has been made for the minimisation of dust impacts and for the avoidance of significant ecological impacts.
• Deliverability: operator willing?	Yes	Mineral operator (of the existing Water Hall Quarry? holds a mineral working option.
• Deliverability: landowner willing?	Yes	Land appears to be owned by the operator and the Agent advises that there would be no legal or ownership constraints Site will be available any time after 1 year.
• Other points to note:	It is proposed to extract 150,000tpa over a period of 3 years.	
Adequacy of Supporting Information	Information is currently inadequate to support the proposed allocation. More convincing evidence is needed on economic viability, including allowance for the mitigation of (currently unexpected) potential impacts on groundwater. Confirmation of mineral operator's involvement would also be helpful. Evidence is also needed to support the reserve calculation. No further evidence was submitted in response to the request for supplementary information.	
Suitability for consideration as a Specific Site allocation, on resource grounds	No – inadequate information.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**High**	The site is immediately adjacent to one area of

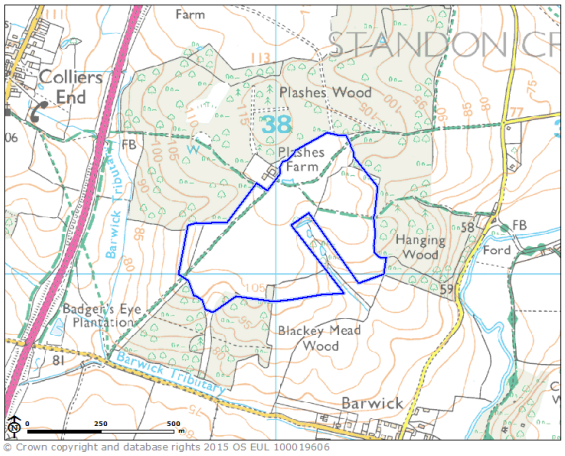
Criterion	Score (Impact)	Justification
		ancient woodland.
Aquifers	**Medium**	The site is located within a Secondary Undifferentiated Aquifer.
BAP Priority Species or Habitats	**Low**	The site is not located within any BAP habitats or areas to known to include BAP species.
BMV land	**Medium**	The site is entirely located within Grade 3 agricultural land.
Cumulative effects	**Low**	The site is within close proximity to Bunkers Hill Quarry but it is currently being restored.
Ecological status of water bodies	**Medium**	The site is located immediately adjacent to a water course.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery may have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	Approximately 15% of the site is located within Source Protection Zone 3 with the remaining 85% not located within any Source Protection Zone.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is under option to a minerals operator.
Landscape designations	**Low**	The site is not located within a landscape

Criterion	Score (Impact)	Justification
		designation.
Local Nature Reserves and Local Wildlife Sites	**Low**	The site is not located within or immediately adjacent to a Local Nature Reserve or Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located within close proximity of Broad Green Wood. The site is not located within or in close proximity to a site allocation within the East Hertfordshire Local Plan 2007.
Recreation	**High**	The site is located immediately adjacent to one PRoW (No: 004).
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use.
Sensitive land uses	**High**	The site is located immediately adjacent to Bayford Hall and Bayford Hall Farm.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objectives 2.1 (heritage), 3.1 landscape) and 9.2 (recreation loss) and a significant negative effect against SA objective 1.1 (biodiversity). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction due to the gently undulating landform, simple land cover pattern and proximity to restored or active mineral sites which decrease the rural quality of the immediate area. There are a limited number of residential properties in the vicinity of the site and distant views of the site from Broad Green. Impacts could be fully mitigated by screening that would be in keeping with the existing landscape character and without adversely affecting visual amenity.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to require further information/assessments to overcome **some highways concerns**. It is stated that the minerals would be carried over private land, through Bunkers Hill Quarry, across Lower Hatfield Road directly to the processing plant at Water Hall Quarry. This would		

Criterion	Score (Impact)	Justification
result in an increase in HGVs crossing the Lower Hatfield Road, which could lead to congestion and safety issues along the road. As the minerals will be processed at Water Hall, the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. Further information is required with regards to the level of intensification the site would create at this access and also information on how this would be managed with the existing services. The B158/B1455 junction hasexisting congestion problems. This would require further investigation. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact on the network (including the proposed routing of HGV movements). Additionally, details of the proposed access arrangement would be required so that HCC Highways can assess its feasibility.		

Site Selection Proforma: MLPCS015

Site Information

Site Name: Plashes Farm		Site ID Number: MLPCS015	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – Terra Consult	**Site Visit Date and Time:**	29/06/16 – Morning
Site Area:	24.4ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	220324 538030	**Planning History:**	Part of the site has been approved for mineral extraction under planning permissions (3/1391-01 and 3/2158-00).
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	Yes	Parts of the site have been worked which may reduce the available deposit. The viability of the reserve would need to be established by borehole data across the site.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes, mostly	The southern tip of the site falls within Resource Block B of IMAU Report 112. The northern part of the site is not covered by any IMAU report but the resources continue, as confirmed by the digital BGS Resource Map, which identifies the material as glacio-fluvial sand & gravel deposits. These are shown to be concealed in the southern part of the site (but only south of a sheet boundary, suggesting a difference of interpretation by different geologists). The more detailed BGS superficial geology mapping confirms the material to be glacio-fluvial in origin and shows the whole of the resource area to be unconcealed by overlying deposits.
• Tonnage of Reserves Calculated?	500,000t	No calculations are provided, although mineral operator is involved and it is likely that an assessment will have been carried out. The indicated tonnage equates to 312,500m^3, implying an average mineral thickness of only 1.49m over the 21-hectare area of working. This is much less than the depth indicated by IMAU data but it may reflect the fact that the deposits will not be worked below the water table, in order to minimise impacts on groundwater.

Criterion	Yes/No	Justification
		The nearest IMAU boreholes are some distance to the south, in an area where resources of 5.3 to 6.4m of sand & gravel are concealed beneath up to 12.3m of glacial till (but this is not likely to be characteristic of the site itself, most of which should have little if any overburden).
• Economic Viability Assessed by Proposer?	Partly (Assumed based on industry involvement)	A mineral operator is involved, (the Agent's client is Water Hall), so it can be assumed that some assessment will have been carried out, but there is no clear evidence of this. Given the apparently limited thickness of workable mineral (above the water table) and the possibility of significant overburden, a critical issue on this site might be the ratio of mineral to overburden, but no evidence has been provided on this. The proposal also relies partly on inert waste landfilling to achieve restoration, which may or may not be viable.
• Economic Viability Allows for Mitigation?	Partly allowed for	Some consideration has been given to water environment issues but no impacts are assumed and no mitigation has been allowed for. The gravels are underlain by London Clay, rather than directly by the Chalk aquifer, but the site is located within a groundwater source protection zone (2), and additional monitoring/mitigation costs might need to be allowed for. Some allowance has been made for the minimisation of dust impacts and for the avoidance of significant ecological impacts.
• Deliverability: operator willing?	Yes	The site is owned by a mineral operator.
• Deliverability: landowner willing?	Yes	Proposal submitted by landowner's/ operator's Agent. Site will be available any time after 1 year.
• Other points to note:	Some previous applications permitted. It is proposed to work the site at a rate of 100,000tpa over 5 years.	
Adequacy of Supporting Information	Information is currently inadequate to support the proposed allocation. More convincing evidence is needed on economic viability. Evidence is also needed to support the reserve calculation. No further evidence was submitted in response to the request for supplementary information.	
Suitability for consideration as a Specific Site allocation, on resource grounds	No – inadequate information.	

Sieve 3

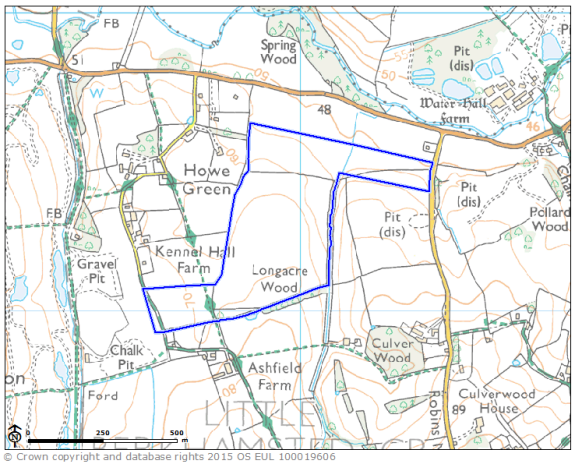
Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Very High**	The site contains three areas of ancient woodland and is located immediately adjacent to three additional areas of ancient woodland.
Aquifers	**Medium**	The site is located within Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Medium**	The site contains three areas of deciduous woodland and is located immediately adjacent to one additional area of deciduous woodland.
BMV land	**Medium**	The site is entirely located within Grade 2 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**Medium**	The site contains one water body.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery may have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The site is entirely located within Source Protection Zone 2.
Heritage designations	**Medium**	The site is located immediately adjacent to one Grade II* and one Grade II listed building.

Criterion	Score (Impact)	Justification
International and national ecological designations	**Very High**	The site contains and is immediately adjacent to Plashes Wood SSSI.
Land ownership	**Low**	The site is in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is partly within Blackey Mead Wood (High Cross) Local Wildlife Site and is immediately adjacent to Badger's Eye Plantation and Plashes Farm Buildings Local Wildlife Sites.
Proximity of allocated residential or built development	**Low**	The site is not located within close proximity of an existing settlement. The site is not located within or in close proximity to a site allocation with the East Hertfordshire Local Plan 2007.
Recreation	**High**	The site contains three PRoW (No's: 041, 043, and 044).
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use.
Sensitive land uses	**High**	The site is located immediately adjacent to Plashes Farm.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area, but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage) and 4.1 (water quality) and significant negative effects against SA objectives 1.1 (biodiversity), 1.3 (biodiversity air quality effects), 3.1 (landscape) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **moderate-high sensitivity** to mineral extraction due to the varied landform, historic field pattern and valued landscape features. Mineral extraction is likely to disturb the strong rural character of the site and the impacts could not be fully mitigated. The southern half of the site is fairly open and there are open views of the site from footpaths		

Criterion	Score (Impact)	Justification
which cross the site. Impacts on the visual amenity of some residents in the village of Barwick could be mitigated by screening to the north of the village.		
Summary of HCC Highways Comments		**Score:**
The site is considered to require further information/assessments to overcome **some highways concerns**. Access to the site would be via Gore Lane with HGV movements directed onto the A10. Discussions with HCC Highways would be required to determine the level of improvements that would be required/appropriate for Gore Lane and so they can assess its feasibility. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact on the network (including the proposed routing of HGVs.		

Site Selection Proforma: MLPCS016

Site Information

Site Name: Water Hall Quarry – Howe Green Area		Site ID Number: MLPCS016	
			
Site Contact:	Agent – Terra Consult	**Site Visit Date and Time:**	30/06/2016 – Morning
Site Area:	25.8ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	528943 209246	**Planning History:**	Part of the site has been subject to a mineral planning application which was refused (IDO-094-49[32]).
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

[32] No proper documents found. Application appears to have been refused or delayed. Stated as non-determination.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Partly	The whole of the site falls within Resource Block B of IMAU Report 67, but only the northern part of the site is shown, in that report, as containing sand & gravel resources. This is confirmed by the digital BGS Resource Map, which identifies the sand & gravel as concealed glacio-fluvial deposits and shows these to be confined to the northern part of the site. The more detailed BGS superficial geology mapping shows the resources to be part of the pre-glacial Kesgrave Catchment Subgroup, which are overlain in the south by glacial till. Both the resource map and the superficial geology map also show a small part of the resource area, at the northern edge of the site, to include younger river terrace deposits.
• Tonnage of Reserves Calculated?	1.7mt	No calculations are provided, although mineral operator is involved and it is likely that an assessment will have been carried out. The indicated tonnage equates to 1.062 million m^3, implying an average mineral thickness of 6.18m over the anticipated 17.2-hectare area of working. (That corresponds to the area of resource within the site as shown on the BGS resource map). The nearest IMAU boreholes within the same resource block, located some distance to the

Criterion	Yes/No	Justification
		west and east of this site, indicate 12.7 and 6.1m of sand & gravel beneath 2.4 and 10.6m of glacial till overburden, respectively.
• Economic Viability Assessed by Proposer?	Partly (Assumed based on industry involvement)	A mineral operator is involved, (the Agent's client is Water Hall), so it can be assumed that some assessment will have been carried out, but there is no clear evidence of this. No restoration is described in the proposal, although other proposals by same operator rely at least partly on infilling with inert waste, which may or may not be viable.
• Economic Viability Allows for Mitigation?	No	No information is provided with the proposal regarding any environmental impacts, so no allowance can have been made for mitigation.
• Deliverability: operator willing?	Yes	Mineral operator (of the existing Water Hall Quarry has 'overriding mineral working options'.
• Deliverability: landowner willing?	Yes	Operator has mineral working option. Multiple landownership, no confirmation was received following request from HCC relating to a small part of the site. Site will be available any time after 1 year.
• Other points to note:	No assessment is offered as to the rate or duration of extraction.	
Adequacy of Supporting Information	Information is currently inadequate to support the proposed allocation. No further evidence was submitted in response to the request for supplementary information.	
Suitability for consideration as a Specific Site allocation, on resource grounds	No – inadequate information.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within in close proximity to any areas of ancient woodland.
Aquifers	**Medium**	The site is located within Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Low**	The site is not located within any BAP habitats or areas to known to include BAP species.

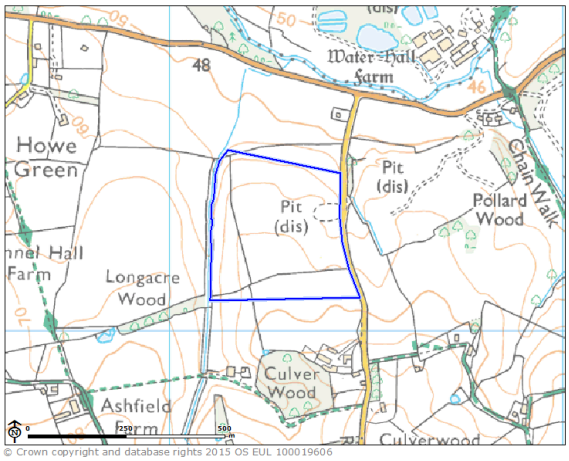
Criterion	Score (Impact)	Justification
BMV land	**Medium**	Approximately 40% of the site is located within Grade 2 agricultural land with the remaining 60% located within Grade 3 agricultural land.
Cumulative effects	**Medium**	The site is located immediately adjacent to Bedwell Park Quarry both of which are within close proximity to Howe Green.
Ecological status of water bodies	**High**	The site contains one watercourse which also runs down its eastern boundary.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery may have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The site is entirely located within Source Protection Zone 3.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Low**	The site is under option to a minerals operator.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Low**	The site is not located within or immediately adjacent to a Local Nature Reserve or Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is allocated immediately adjacent to Howe Green. The site is not located within or in close proximity

Criterion	Score (Impact)	Justification
		to a site allocation within the East Hertfordshire Local Plan 2007.
Recreation	**High**	The site contains one PRoW (No: 074) and Bridleway (074) to the west and is within 100m of two other PRoW (No: 074) to the south.
Restoration	**Medium**	No use has been suggested for the site's restoration. As such, it is uncertain whether a high quality restoration would take place once mineral extraction has finished.
Sensitive land uses	**High**	The site is allocated immediately adjacent to Howe Green. The site is also within close proximity to a property at Ashfield Farm and one property along Robins Nest Hill.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objective 3.1 (landscape) and significant negative effects against SA objectives 1.1 (biodiversity protection), 4.1 (water quality) and 9.2 (recreation loss). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **moderate sensitivity** to mineral extraction due to the site's openness, historic field system and its rural character. However, some impacts could be mitigated by screening to the west and post-excavation restoration offers opportunities to improve degraded hedgerow structure. Views of the site from Howe Green are possible and there are open views from the footpaths that cross the site. Impacts on these receptors could be partially mitigated through screening.		
Summary of HCC Highways Comments	**Score:**	
The site has **not been assessed by HCC Highways** as no details of access arrangements have been provided. If access is proposed to be from Robins Nest Hill it is anticipated that improvements will be required to accommodate the proposal. It should be noted that the minerals extracted will be processed at Water Hall Quarry. This being the case, the amount of traffic generated by Water Hall Quarry will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past.		

Criterion	Score (Impact)	Justification
The B158/B1455 junction has existing congestion problems. This would require further investigation. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact on the network (including the proposed routing of HGVs). Additionally, details of the proposed arrangement will be required so that HCC can assess its feasibility.		

Site Selection Proforma: MLPCS017

Site Information

Site Name: Robins Nest Hill		Site ID Number: MLPCS017	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – Terra Consult	**Site Visit Date and Time:**	30/06/2016 – Morning
Site Area:	11.7ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	209296 529341	**Planning History:**	The site was subject to a mineral planning application which was refused (IDO-094-49[33]).
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

[33] No proper documents found. Application appears to have been refused or delayed. Stated as non-determination.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Partly	The site falls within Resource Block B of IMAU Report 67, but only the northern part of the site is shown, in that report, as containing sand & gravel resources. This is confirmed by the digital BGS Resource Map, which identifies the sand & gravel as concealed glacio-fluvial deposits. The more detailed BGS superficial geology mapping shows the resources to be part of the pre-glacial Kesgrave Catchment Subgroup and, unlike the resource map, shows these to be present beneath the whole of the site, overlain in part by glacial till.
• Tonnage of Reserves Calculated?	1mt	No reserve calculations are provided. The indicated tonnage equates to 625,000 m^3, which implies an average mineral thickness of 6.58m over the anticipated working area of 9.5 hectares. (That represents a much greater area than the resource outcrop within the site as shown on the BGS resource map and therefore will need to be justified by borehole data). The mineral would be worked only above the water table to minimise impacts on groundwater. The nearest IMAU boreholes within the same resource block, located some distance to the west and east of this site, indicate 12.7 and 6.1m of sand & gravel beneath 2.4 and 10.6m of

Criterion	Yes/No	Justification
		glacial till overburden, respectively.
• Economic Viability Assessed by Proposer?	Partly (Assumed based on industry involvement)	A mineral operator is involved (the Agent's client is Water Hall), so it can be assumed that some assessment will have been carried out, but there is no clear evidence of this. The proposal relies partly on inert waste landfilling to achieve restoration , which may or may not be viable.
• Economic Viability Allows for Mitigation?	Partly allowed for	Some consideration has been given to water environment issues but no impacts are assumed and no mitigation has been allowed for, other than limiting the depth of extraction. Given the significance of the underlying Chalk aquifer and the location of the site within a groundwater source protection zone (3), this may be too simplistic, and additional monitoring/ mitigation costs might need to be allowed for. Some allowance has been made for the minimisation of dust impacts and for the avoidance of significant ecological impacts.
• Deliverability: operator willing?	Not known	No evidence of mineral operator involvement yet, although Agent's client is Water Hall (England).
• Deliverability: landowner willing?	No	Lease and working arrangements would need to be agreed with the landowner. No confirmation was received following request from HCC. In addition there is an outstanding covenant restriction which has to be taken through due legal process to be removed. Site is expected to be available within 1 to 5 years.
• Other points to note:	Previous application refused. It is proposed to extract 150,000tpa over a period of 6.5 years.	
Adequacy of Supporting Information	Information is inadequate to support the proposed allocation. Evidence is needed on economic viability, including allowance for the mitigation of (currently unexpected) potential impacts on groundwater. Confirmation of mineral operator involvement and landowner agreement is also needed. Evidence is also needed to support the reserve calculation. No further evidence was submitted in response to the request for supplementary information.	
Suitability for consideration as a Specific Site allocation, on resource grounds	No – inadequate information.	

Sieve 3

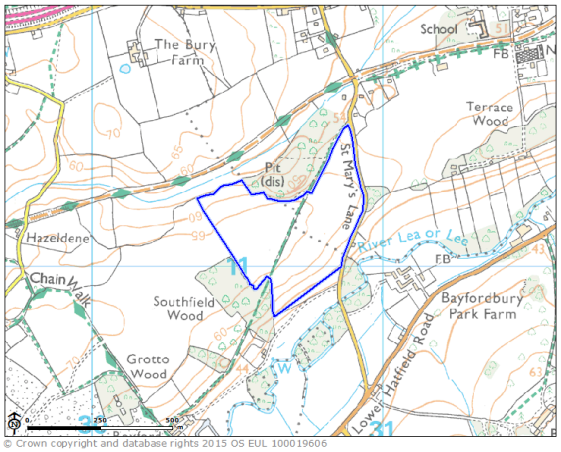
Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity to any areas of ancient woodland.
Aquifers	**Medium**	The site is located within Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Low**	The site is not located within any BAP habitats or areas to known to include BAP species.
BMV land	**Medium**	Approximately 30% of the site is located within Grade 2 agricultural land with the remaining 70% located within Grade 3 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**Medium**	The site is immediately adjacent to a watercourse.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery may have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The site is entirely located within Source Protection Zone 3.
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national	**Low**	The site is not located within 250m of any

Criterion	Score (Impact)	Justification
ecological designations		international or national ecological designations.
Land ownership	**Medium**	The site is not in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Low**	The site is not located within or immediately adjacent to a Local Nature Reserve or Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located within close proximity to Howe Green. The site is not located within or in close proximity to a site allocation within the East Hertfordshire Local Plan 2007.
Recreation	**Low**	The site does not contain nor is it located within close proximity to any PRoW or recreational facilities.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use.
Sensitive land uses	**Medium**	The site is located within close proximity to one property along Robins Nest Hill.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area, but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies a minor negative effect against SA objective 3.1 (landscape) and 4.1 (water quality) and significant adverse effects against SA objectives 1.1 (biodiversity protection). In addition, the SA identifies a minor positive effect (with some uncertainty) against SA objective 9.3 (recreation provision). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **moderate sensitivity** to mineral extraction due to the site's openness, historic field system and its rural character. Some impacts could be mitigated by screening and post-excavation restoration offers opportunities to improve the degraded hedgerow		

Criterion	Score (Impact)	Justification
structure. There are filtered views of the site from Howe Green and local footpaths within the vicinity of the site and there is one residential property within the vicinity of the site with open views. However, it is considered that views from this property could be mitigated by screen planting.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to require further information/assessments to overcome **some highways concerns**. The site would be accessed via Robins Nest Hill which has constraints that are likely to be overcome by modest highway improvements. It should be noted that the minerals extracted from the site would be processed at Water Hall Quarry. This being the case the amount of traffic generated by Water Hall Quarry will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. The B1455 junction has existing congestion problems. This would require further investigation. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact on the network (including the proposed routing of HGVs). Additionally, details of the proposed arrangement will be required so that HCC can assess its feasibility.		

Site Selection Proforma: MLPCS018

Site Information

Site Name: Southfield Wood East		Site ID Number: MLPCS018	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – Terra Consult	**Site Visit Date and Time:**	29/06/2016 – Morning
Site Area:	16.7ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	211056 530564	**Planning History:**	Part of the site has been subject to a mineral planning permission which was refused (3/1568/78[34]).
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

[34] No record found.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site falls within Resource Block D of IMAU Report 112. The resource is confirmed by the digital BGS Resource Map, which identifies the material as concealed glacio-fluvial deposits. The more detailed BGS superficial geology mapping identifies the resources as part of the pre-glacial Kesgrave Catchment Subgroup, which are overlain over almost all of the site by glacial till.
• Tonnage of Reserves Calculated?	500,000t	No reserve calculations are provided. The indicated tonnage equates to 312,500m^3, which implies an average mineral thickness of only 2.23m over the anticipated working area of 14 hectares. Nearby IMAU boreholes reveal 1.5 to 7.5m of sand & gravel beneath a 1.5 to 8.8m overburden of glacial till.
• Economic Viability Assessed by Proposer?	Partly (Assumed based on industry involvement)	A mineral operator is involved (the Agent's client is Water Hall), so it can be assumed that some assessment will have been carried out, but there is no clear evidence of this. Given the apparently limited thickness of mineral and the presence of significant overburden, a critical issue on this site could be the ratio of mineral to overburden, and no evidence has been provided on this. The proposal also relies partly on inert

Criterion	Yes/No	Justification
		waste landfilling to achieve restoration , which may or may not be viable.
• Economic Viability Allows for Mitigation?	Partly allowed for	Some consideration has been given to water environment issues but no impacts are assumed and no mitigation has been allowed for, although the deposit is said to be entirely above the water table. However, given the significance of the underlying Chalk aquifer and the location of the site within a groundwater source protection zone (3), this may be too simplistic, and additional monitoring/ mitigation costs might need to be allowed for. Some allowance has been made for the minimisation of dust impacts and for the avoidance of significant ecological impacts.
• Deliverability: operator willing?	Not known	No evidence of mineral operator involvement yet, although Agent's client is Water Hall (England).
• Deliverability: landowner willing?	No	Lease and working arrangements would need to be agreed with the landowner. Note that surface and minerals ownership are held separately with 'overriding mineral interest' – but no indication that an operator has secured those rights. No confirmation was received following request from HCC. Subject to the above, the site is expected to be available within 1 to 5 years.
• Other points to note:	It is proposed to extract the mineral at a rate of 150,000tpa over a period of 3.3 years.	
Adequacy of Supporting Information	Information is inadequate to support the proposed allocation. More convincing evidence is needed on economic viability, including allowance for the mitigation of (currently unexpected) potential impacts on groundwater. Confirmation of mineral operator involvement and landowner agreement is also needed. Evidence is also needed to support the reserve calculation. No further evidence was submitted in response to the request for supplementary information.	
Suitability for consideration as a Specific Site allocation, on resource grounds	. No – inadequate information.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport

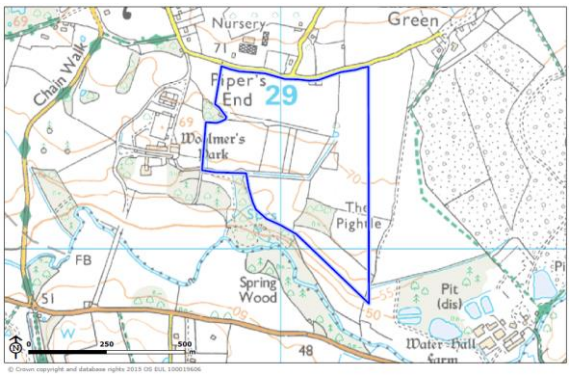
Criterion	Score (Impact)	Justification
		Safeguarding Zone.
Ancient Woodland	**High**	The site is located immediately adjacent to one area of ancient woodland.
Aquifers	**Medium**	The site is located within Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Low**	The site is not located within any BAP habitats or areas to known to include BAP species.
BMV land	**Medium**	The site is entirely located within Grade 2 agricultural land.
Cumulative effects	**Low**	The site is located immediately adjacent to Waterhall Farm Quarry. However, it is inactive with regard to mineral extraction. Furthermore, the site has been put forward by the owner of the existing quarry and it is considered that extraction at this site will only commence once works on the existing quarry have been completed.
Ecological status of water bodies	**Low**	The site does not contain nor is it located near to a water body.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The site is entirely located within Source Protection Zone 3.
Heritage designations	**Medium**	The site is located immediately adjacent to the Hertingfordbury Conservation Area.

Criterion	Score (Impact)	Justification
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Medium**	The site is not in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is immediately adjacent to Southfield Wood Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located within close proximity to Hertingfordbury. The site is not located within or in close proximity to a site allocation within the East Hertfordshire Local Plan 2007.
Recreation	**High**	The site contains two PRoW (Nos: 002 and 057).
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use.
Sensitive land uses	**Medium**	The site is located within close proximity of a number of properties along St. Mary's Lane.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Medium**	The site is located within close proximity to the strategic road network (A414) and is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies a minor negative effect against SA objective 3.1 (landscape) and significant negative effects against SA objectives 1.1 (biodiversity), 1.3 (biodiversity air pollution effects), 2.1 (historic environment) and 9.2 (recreation). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **low-moderate sensitivity** to mineral extraction due to the gently undulating landform and its elevated and enclosed position above the River Lea. Impacts could be fully mitigated by screening and setting mineral extraction back from the ancient woodland. Views of the site from the locality are limited and could be mitigated be screening. However, mineral workings are likely to be seen by people using the footpath crossing the site		

Criterion	Score (Impact)	Justification
unless it is diverted.		
Summary of HCC Highways Comments		**Score:**
The site is considered to require further information/assessments to overcome **some highways concerns**. Access would be directly over company land to the existing Water Hall Quarry processing plant. This being the case the amount of traffic generated by Water Hall Quarry will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. The B158/B1455 junction has existing congestion problems. This would require further investigation. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact on the network (including the proposed routing of HGVs). Additionally, details of the proposed arrangement will be required so that HCC can assess its feasibility.		

Site Selection Proforma: MLPCS019

Site Information

Site Name: Pipers End		Site ID Number: MLPCS019	
			
Site Contact:	Agent – Terra Consult	**Site Visit Date and Time:**	29/06/2016 – Afternoon
Site Area:	25.2ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	210423 529310	**Planning History:**	The site has no relevant planning history.
District:	East Hertfordshire		
Mineral to extract:	Sand and Gravel		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within in an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	Most of the site falls within Resource Block E of IMAU Report 69. The southern tip of the site continues into Resource Block B of IMAU Report 67. The resource areas are confirmed by the digital BGS Resource Map, which identifies them as concealed glacio-fluvial deposits. The more detailed BGS superficial geology mapping identifies the resources as part of the pre-glacial Kesgrave Catchment Subgroup, which are overlain over almost all of the site by glacial till.
• Tonnage of Reserves Calculated?	1.4mt	No borehole evidence provided to support calculation. The estimated tonnage equates to 875,000m^3, which implies an average mineral thickness of 4.38m over the anticipated working area of 20-hectares (Note: It is stated as 2ha at the start of the proforma, which is assumed to be an error). Nearby IMAU Borehole and Exposure records reveal 5.7 to more than 12m of sand & gravel beneath 8.2 to 15.6m of glacial till overburden.
• Economic Viability Assessed by Proposer?	Partly (Assumed based on industry involvement)	A mineral operator is involved (the Agent's client is Water Hall), so it can be assumed that some assessment will have been carried out, but there is no clear evidence of this. Given the presence of significant overburden, a critical issue on this

Criterion	Yes/No	Justification
		site could be the ratio of mineral to overburden, and no evidence has been provided on this. The proposal also relies partly on inert waste landfilling to achieve restoration , which may or may not be viable.
• Economic Viability Allows for Mitigation?	Partly allowed for.	Some consideration has been given to water environment issues but no impacts are assumed and no mitigation has been allowed for, although the deposit is expected (by the Agent) to be entirely above the water table. However, given the significance of the underlying Chalk aquifer and the location of the site within a groundwater source protection zone (3), this may be too simplistic, and additional monitoring/ mitigation costs might need to be allowed for. Some allowance has been made for the minimisation of dust impacts and for the avoidance of significant ecological impacts.
• Deliverability: operator willing?	Not known	No evidence of mineral operator involvement yet, although Agent's client is Water Hall (England).
• Deliverability: landowner willing?	No	Lease and working arrangements would need to be agreed with the landowner. No confirmation was received following request from HCC. Subject to this, the site is expected to be available within the next 6 to 10 years.
• Other points to note:	Extraction is proposed at a rate of 150,000tpa Over a period of 9.3 years.	
Adequacy of Supporting Information	Information is inadequate to support the proposed allocation. More convincing evidence is needed on economic viability, including allowance for the mitigation of (currently unexpected) potential impacts on groundwater. Confirmation of mineral operator involvement and landowner agreement is also needed. Evidence is also needed to support the reserve calculation. No further evidence was submitted in response to the request for supplementary information.	
Suitability for consideration as a Specific Site allocation, on resource grounds	No – inadequate information.	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport

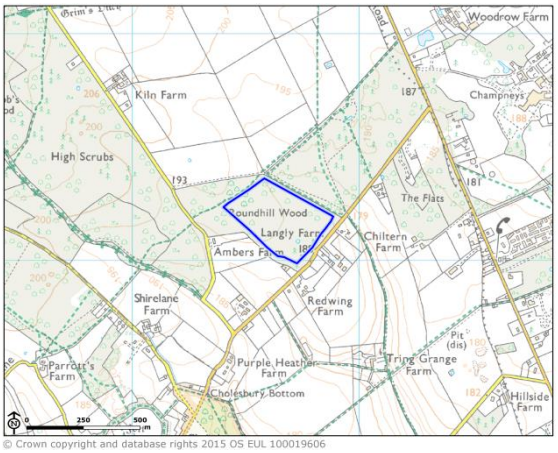
Criterion	Score (Impact)	Justification
		Safeguarding Zone.
Ancient Woodland	**Low**	The site is not located within close proximity to any areas of ancient woodland.
Aquifers	**Medium**	The site is located within Secondary A and Secondary Undifferentiated aquifers.
BAP Priority Species or Habitats	**Medium**	The site contains one area of deciduous woodland.
BMV land	**Medium**	The site is entirely located within Grade 3 agricultural land.
Cumulative effects	**Low**	The site is located within close proximity to Waterhall Farm Quarry. However, it is inactive with regard to mineral extraction. Furthermore, the site has been put forward by the owner of the existing quarry and it is considered that extraction at this site will only commence once works on the existing quarry have been completed.
Ecological status of water bodies	**High**	The site contains two watercourses and is immediately adjacent to two additional watercourses.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	Approximately 85% of the site is located within Source Protection Zone 3 with the remaining 15% not located within any Source Protection Zone.

Criterion	Score (Impact)	Justification
Heritage designations	**Low**	The site is not located within or immediately adjacent to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Medium**	The site is not in control of the industry.
Landscape designations	**Low**	The site is not located within a landscape designation.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The site is located immediately adjacent to Spring Wood (near Howe Green) Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The site is located within close proximity of Letty Green. The site is not located within or in close proximity to a site allocation within the East Hertfordshire Local Plan 2007.
Recreation	**Medium**	The site is located within the grounds of the Hertfordshire Polo Club.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored back to agricultural use.
Sensitive land uses	**High**	The site is located immediately adjacent to a number of properties along Woolmers Lane. The site is also located within the grounds of the Hertfordshire Polo Club.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area, but is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies minor negative effects against SA objective 2.1 (heritage), 3.1 (landscape) and 4.1 (water quality) and significant adverse effects against SA objective 1.1 (biodiversity protection) and 9.2 (recreation loss). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have **moderate sensitivity** to mineral extraction due to its unified rural		

Criterion	Score (Impact)	Justification
character and valued features. However, the well wooded character means impacts on the surrounding landscape could be mitigated by effective screening that is in character with the landscape. There are a limited number of properties within the vicinity of the site and only two cottages have open views of the site. Due to the flat landform impacts on these cottages could be mitigated though screening without losing the existing visual amenity.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to require further information/assessments to overcome **some highways concerns**. It is proposed that minerals would be transported over company land to the existing Water Hall Quarry processing plant. This being the case the amount of traffic generated by Water Hall Quarry will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. The B158/B1455 junction as having existing congestion problems. This would require further investigation. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact on the network (including the proposed routing of HGVs). Additionally, details of the proposed arrangement will be required so that HCC can assess its feasibility.		

Site Selection Proforma: MLPCS020

Site Information

Site Name: Roundhill Wood		Site ID Number: MLPCS020	
 © Crown copyright and database rights 2015 OS EUL 100019606			
Site Contact:	Agent – Stephen Bowley Planning Consultancy	**Site Visit Date and Time:**	19/09/16 - Morning
Site Area:	9.4 ha	**Attendees:**	Jonny Hill
Central Grid Ref.:	208179 493652	**Planning History:**	Part of the wider site in the landownership was subject to planning permission for the importation of clean waste to infill the old clay working (4/1142-86). This does not cover this site boundary.
District:	Dacorum		
Mineral to extract:	Brick Clay		

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The site is not located within an existing urban area.
Sites with planning permission for other development	No	The site does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The site has not previously been worked.
Proceed to Sieve 2	Yes.	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	The site is located within an area of brick clay resources, as identified on the digital BGS Resource Maps. On the BGS superficial geology maps those resources are identified as part of the 'Clay with Flints' deposits which directly overlie and infill solution hollows within the underlying Cretaceous Chalk. The site is located approximately 3km by road from the existing Bellingdon Brick Works within a similar but entirely separate part of the deposits.
• Tonnage of Reserves Calculated?	30,000t	Evidenced by recent trial holes excavated by an experienced brick clay prospector (F Brown & Sons) together with historic evidence from former workings in the area. Not assessed in detail (and cannot be, due to the nature of the deposit). The proposal notes that the presence of clay suitable for use in brickmaking can be localised, which will mean that some of the clay within the site will be suitable for brick making, whilst some of it will not. This is usual. Approximate gross reserve estimated at 15,000 m^3 (equivalent to circa 30,000 tonnes) over a 10-hectare area of working, within the overall 41-hectare site).

Criterion	Yes/No	Justification
• Economic Viability Assessed by Proposer?	Yes	Proposal submitted by a planning consultant who notes that the clay would be worked by or on behalf of HG Matthews – the specialist hand-made brick manufacturer at nearby Bellingdon.
• Economic Viability Allows for Mitigation?	Yes	Proposal acknowledges potential impacts, notably on replanted ancient woodland, and the need for mitigation. However, the site itself is commercial woodland and restoration would be simple, as part of the commercial forestry regime. The site is within the Chilterns AONB which could be a major constraint, but any impact is mitigated by the very small scale of working and the traditional nature of the industry.
• Deliverability: operator willing?	Yes	Proposal submitted by a planning consultant who notes that the clay would be worked by or on behalf of HG Matthews – the specialist hand-made brick manufacturer at nearby Bellingdon.
• Deliverability: landowner willing?	Yes	Original proposal was submitted on behalf of the landowner.
• Other points to note:	The revised proposal, which relates to only about 25% of the total resource and 25% of the total site area would be extracted over a period of 5 years, with an output rate of approximately 6,000tpa.	
Adequacy of Supporting Information	Information is adequate to support the proposed allocation.	
Suitability for consideration as a Specific Site allocation, on resource grounds	Yes	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The site is not located within an Airport Safeguarding Zone.
Ancient Woodland	**Very High**	The site is located within Roundhill Wood Ancient Woodland which is also extends beyond the site.
Aquifers	**High**	The Environment Agency has confirmed that this site is located on a Principal aquifer.

Criterion	Score (Impact)	Justification
BAP Priority Species or Habitats	**Medium**	The site includes an area of deciduous woodland and is adjacent to additional areas of deciduous woodland.
BMV land	**Medium**	The site is wholly located within Grade 2 agricultural land.
Cumulative effects	**Low**	The site is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**High**	The site contains a small water body.
Flood risk	**Positive**	The site is not located within Flood Zones 2-3b. The proposed use may include a dewatering pond, which has the potential to hold excess water in times of heavy rain. However, this is uncertain and will not be known until the planning application stage.
Geodiversity	**Low**	The site is not located near to a Local Geological Site or a national site of geological interest (SSSI).
Green Belt	**Low**	The site is located within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery may have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The entirety of the site is located within Source Protection Zone 3.
Heritage designations	**Low**	The site does not contain nor is located within close proximity to any heritage designations.
International and national ecological designations	**Low**	The site is not located within 250m of any international or national ecological designations.
Land ownership	**Medium**	The site is not in control of the industry.
Landscape designations	**Very High**	The site is entirely located within the Chilterns Area of Outstanding Natural Beauty.
Local Nature Reserves and Local Wildlife Sites	**High**	The site is located entirely within the Roundhill Wood Local Wildlife Site.

Criterion	Score (Impact)	Justification
Proximity of allocated residential or built development	**Low**	The site is not located within close proximity to an existing settlement nor is it located within or in close proximity to a site allocation within the Dacorum District Core Strategy 2013 or Dacorum District Draft Site Allocations DPD 2016.
Recreation	**High**	The site does not contain any PRoW, although two footpaths run alongside the northeast and northwest of the site.
Restoration	**Low**	Once mineral extraction has finished onsite the land will be restored to indigenous woodland and commercial forestry.
Sensitive land uses	**High**	The site is located immediately adjacent to a limited number properties located on the opposite side of Cholesbury Road.
Sustainable transport	**High**	The site is not located within close proximity to the rail network or navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**High**	The site is not located within or in close proximity to an Air Quality Management Area, and is not located within close proximity to the strategic road network.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this site option identifies significant negative effects against SA objectives 1.1 (biodiversity protection), 1.3 (biodiversity air pollution effects), 3.1 (landscape) and 8.4 (agricultural land). In addition, minor negative effects are identified against SA objectives 2.1 (historic environment), 4.1 (water quality), 7.1 (recycling),9.1 (health and well being) and 9.2 (recreation loss). Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The site is considered to have an overall **moderate sensitivity** to mineral extraction due to the unified rural character of the area and its position in the AONB. Mineral extraction is likely to degrade valued features, such as the ancient woodland contained within the site. Furthermore, mineral extraction will affect people using the network of local footpaths that cross the site and a limited number of residential properties on the site boundary which would have open views to the site. Impacts on residents could be mitigated by limiting the extent of the workings at any one time and retaining tree cover around the site boundary for the life of the extraction to prevent views into the site.		
Summary of HCC Highways Comments	**Score:**	
The site is considered to require further information/assessments to overcome **some highways**		

Criterion	Score (Impact)	Justification
concerns. It is proposed that the clay would be worked on a campaign basis which could amount to 28 days within a single year. The site promoter estimates that this would result in traffic volumes of approximately 22 two-way movements per day. However, further information in the form of a Transport Assessment would be required to justify this volume of vehicle movements. Additionally, further information is required on the times these vehicle movements would take place. The site promoter states that there is an existing access through double gates via Cholesbury Road. No information has been provided on the dimensions or visibility of the existing gates. As part of any application, details on the proposed access arrangement will be required so that HCC can assess its feasibility. It is understood that vehicle movements would likely remain in the local area. However, further information on the proposed routing of HGV movements would be required to determine the potential impact on the network. The site promoter states that there are a number of public footways which cross the wider site. Therefore, HCC Public Right of Way Team would need to be consulted.		

Preferred Area 1 Proforma

Preferred Area Information

Description:	Land close to the existing Hatfield Quarry
Area:	68 ha
Central Grid Ref.:	216314 532297
District:	St Albans District & Welwyn Hatfield District
Mineral to extract:	Sand and Gravel
Planning History:	The site has no relevant planning history.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The area is not located within an existing urban area.
Sites with planning permission for other development	No	The area does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The area has not previously been worked.
Proceed to Sieve 2	Yes	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	Yes	Most of the area falls within Resource Block A of IMAU Report 67, whilst the western edge falls within Resource Block C of IMAU Report 71 (effectively a continuation of the same resource). This is confirmed by the digital BGS resource map which shows virtually the whole of the

Criterion	Yes/No	Justification
		area to be within an area of 'concealed glacio-fluvial deposits', overlain in one area (along a former watercourse) by 'sub-alluvial river terrace deposits'. The BGS superficial geology map indicates the main, lower resource to be part of the pre-glacial Kesgrave Catchment Subgroup, overlain ('concealed') in this area by glacial till.
• Tonnage of Reserves Calculated?	N/A	This level of detail is not possible for a Preferred Area allocation, although the southern half of the area coincides with the Specific Site proposal for Hatfield Aerodrome (MLPC006), which has an estimated reserve of 8mt. A single IMAU borehole within the remaining northern part if the site indicates at least 6.7m of sand & gravel beneath an overburden of 5.4m. The land immediately to the north, in a continuation of the same deposit, has also been put forward as a Specific Site (MLPC008), with an estimated reserve of more than half a million tonnes (within a much smaller area).
• Economic Viability	Probably Yes	Given that the southern part of the area, and land directly to the north, have both been put forward as Specific Sites, with demonstrable economic viability, and that numerous other sites within this general area (and in the same geological deposit) have previously been successfully worked, there is every reason to suppose that the whole of this site will be economically viable.
• Deliverability	Probably	Unless there is landowner resistance or other planning proposals/allocations. It has been noted there is a plume of bromate coincident with this Preferred Area with a concentration of 750 µg/l to more than 1000 µg/l in a substantial part of the area. This may impact on the deliverability of mineral resource in this area and would need to be fully addressed.
• Other points to note:		
Suitability for consideration as a Preferred Area allocation, on resource grounds	Yes (subject to any HCC information on deliverability).	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Medium**	The Preferred Area is located within the Luton Airport Safeguarding Zone.
Ancient Woodland	**Low**	There is not any ancient woodland within 500m of the Preferred Area.
Aquifers	**Medium**	This Preferred Area is located within an undifferentiated Secondary Aquifer.
BAP Priority Species or Habitats	**Medium**	The Preferred Area is partly within an area identified as having no main habitat but additional BAP habitats present.
BMV land	**Medium**	The northern part of this Preferred Area is partially located within an area of Grade 2 agricultural land.
Cumulative effects	**Low**	The Preferred Area is not located within 250m of any existing mineral sites.
Ecological status of water bodies	**High**	There are a number of water bodies adjacent to the Preferred Area. The Ellen Brook runs through the eastern part of the Preferred Area. The River Nast also runs in a culvert through the Preferred Area.
Flood risk	**Low**	The Preferred Area is located entirely in Flood Zone 1.
Geodiversity	**Low**	The Preferred Area is not within proximity of any geological conservation sites.
Green Belt	**Low**	The Preferred Area is located entirely within the Green Belt and it is considered that development of the site for mineral extraction will not have an unacceptable impact on the openness of the Green Belt or conflict with the purposes of including land in the Green Belt. However, the use and location of mineral plant/machinery could have an unacceptable impact on the Green Belt. This is uncertain as a detailed design of the site will not be known until the planning application stage.
Groundwater vulnerability	**Medium**	The Preferred Area is located partially within SPZ 3 and partially within SPZ2. The central area of the site is not located within an SPZ. There is a plume of bromate coincident with this Preferred Area with a concentration of 750 µg/l to more than 1000 µg/l in a substantial part of the area. The implications of mineral extraction on groundwater contamination in

Criterion	Score (Impact)	Justification
		this area remain uncertain.
Heritage designations	**Medium**	Astwick Manor is a Grade II listed building, which lies adjacent to the northwest of the Preferred Area. The Preferred Area is also a possible area of archaeological interest.
International and national ecological designations	**Low**	The Preferred Area is not located in close proximity to any national or international ecological designations.
Land ownership	**Medium**	The area is not in control of the industry; however, the landowner is working with a mineral operator in respect of the southern area (MLPCS006).
Landscape designations	**Low**	The Preferred Area is not within or adjacent to any landscape designations.
Local Nature Reserves and Local Wildlife Sites	**Medium**	The Preferred Area is located immediately adjacent to Home Covert and Round Wood, which has been identified as a Local Wildlife Site.
Proximity of allocated residential or built development	**Medium**	The Preferred Area is located in close proximity to Land at North West Hatfield (SDS5 / Hat1), which is allocated in the emerging Welwyn Hatfield Draft Local Plan Proposed Submission (August 2016) document.
Recreation	**High**	The Preferred Area is part of Ellenbrook Fields, which is an area of recreational green space with permissive footpaths suitable for walkers and cyclists.
Restoration	**Low**	The 2002-2016 Hertfordshire Minerals Local Plan Review suggests that restoration should be consistent with the Hatfield Aerodrome Supplementary Planning Guidance and planning permission ref S6/1999/1064/OP for the BAe site as a whole to deliver the proposed Country Park. It also suggests that there is potential for restoration to include extensive new woodland and amenity use.
Sensitive land uses	**Medium**	The Preferred Area is within close proximity to existing residential development in Hatfield, although it is largely separated from these dwellings by a series of water bodies in Ellenbrook Park.
Sustainable transport	**High**	The Preferred Area is not located within close proximity to the rail network or navigable

Criterion	Score (Impact)	Justification
		waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Low**	The Preferred Area is located immediately adjacent to the strategic road network (A1057) but is not located within or in close proximity to an Air Quality Management Area.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this Preferred Area identifies significant negative effects against SA objectives 1.1 (biodiversity protection), 1.3 (biodiversity air pollution effects), 4.1 (water quality) and 9.2 (recreation loss). Minor negative effects were identified against SA objectives 2.1 (historic environment), 7.1 (recycling), 8.4 (agricultural land), 9.1 (health and wellbeing) and 9.4 (aerodrome safety). Positive or neutral effects were recorded against all other SA objectives, with the exception of SA objective 5.2 (energy efficiency), to which effects were uncertain. Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	
Summary of Landscape and Visual Sensitivity Comments		
The area is considered to have an overall low-moderate sensitivity due to its former industrial use. The area is flat, largely screened by boundary vegetation and post operation restoration could improve the existing landscape character. The boundary vegetation screens views from the small number of residential properties in the vicinity of the site. There are a small number of locations with more open or filtered views of the area; however, impacts can be fully mitigated by additional screening without an adverse impact on visual amenity.		
Summary of HCC Highways Comments		**Score:**
This area is considered to require further information/assessment to overcome **some highways concerns**. The area could be an extension of a site locally known as Hatfield Aerodrome (planning application reference: PL/0755/16). HCC Highways recently commented on this planning application and whilst no objection was raised, concerns were raised. These concerns were overcome by limiting the number of vehicle movements associated with the site. Any extension is likely to raise further concerns. Further information is required in the form of a Transport Assessment detailing the access arrangements; proposed trip generation; impacts and cumulative impact on Hatfield Road / Ellenbrook Junction and Hatfield Road/Comet Way junction; Public Rights of Way; the safety of all mode users along Hatfield Road; and a broader assessment of the collision data to take into account the proposed route for HGV movements.		

Preferred Area 2 Proforma

Site Information

Description:	Land to the north of the existing Rickneys Quarry
Area:	61 ha
Central Grid Ref.:	216260 532275
District:	East Hertfordshire District
Mineral to extract:	Sand and Gravel
Planning History:	The preferred area has been subject to a number of applications (3/1653-95, 3/0959-90 and 3/0711-88) all of which were withdrawn. A smaller part of the preferred area has been subject to an application 3/2077-13 (varying 3/0629-06) which has a resolution to grant.

Sieve 1

Constraint	**Entirely or partly located within the constraint (Yes/No)**	**Justification**
Urban areas	No	The area is not located within an existing urban area.
Sites with planning permission for other development	No	The area does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	No	The area has not been previously worked.
Proceed to Sieve 2	Yes	
Justification	See above.	

Sieve 2

Criterion	**Yes/No**	**Justification**
• Within Resource Area?	Yes	All but a very small part of the area falls within Resource Block B of IMAU Report 112. This is confirmed by the digital BGS Resource Map which identifies the resource as 'glacio fluvial

Criterion	Yes/No	Justification
		deposits'. The BGS superficial geology map shows the deposits to be part of the pre-glacial Kesgrave Catchment Subgroup, overlain in part of the northern area by glacial till. The proposed allocation comprises two separate parcels of land, to the north and south of the existing Rickneys Quarry, where the same resources have been partially worked. The northern area has been subject to previous planning applications for mineral extraction dating from 1988 to 1995, all of which were withdrawn.
• Tonnage of Reserves Calculated?	N/A	This level of detail is not possible for a Preferred Area allocation, although the southern part of the area coincides with the Specific Site proposal (Land at Ware Park - MLPC003), which has an estimated reserve of 2.6mt. Three IMAU boreholes close to the western, northern and eastern boundaries of the larger, northern part if the site indicate between 8.9 and 12.4m of sand & gravel beneath an overburden of between 0.3 and 3.8m, suggesting a comparable depth of resource over a larger surface area.
• Economic Viability	Probably Yes	Given that the southern part of the area has been put forward as Specific Site, with demonstrable economic viability, and that the land in between the two parts of the allocations is successfully being worked, there is every reason to suppose that the whole of this site will be economically viable.
• Deliverability	Probably	Unless there is landowner resistance or other planning proposals/allocations.
• Other points to note:		
Suitability for consideration as a Preferred Area allocation, on resource grounds	Yes (subject to any HCC information on deliverability).	

Sieve 3

Criterion	Score (Impact)	Justification
Airport Safeguarding Zones	**Low**	The Preferred Area is not located within an

Criterion	Score (Impact)	Justification
		Airport Safeguarding Zone.
Ancient Woodland	**Very High**	There are two areas of replanted ancient woodland within the Preferred Area and there are further areas of ancient woodland adjacent to the area.
Aquifers	**Medium**	This Preferred Area is located partly within a Secondary A Aquifer and partly within an undifferentiated Secondary Aquifer.
BAP Priority Species or Habitats	**Medium**	The Preferred Area contains an area of deciduous woodland, which is a BAP priority habitat.
BMV land	**Medium**	This Preferred Area consists entirely of Grade 3 agricultural land.
Cumulative effects	**Medium**	The Preferred Area is adjacent to Rickneys, Chapmore End, which has planning permission for sand and gravel extraction (extension of existing quarry), although the site has not been worked. There are some dwellings in proximity of the site, particularly at Chapmore End.
Ecological status of water bodies	**Low**	There are no watercourses within proximity to the Preferred Area.
Flood risk	**Low**	The Preferred Area lies entirely within Flood Zone 1.
Geodiversity	**Low**	This Preferred Area is not within or adjacent to any geodiversity conservation sites.
Green Belt	**Low**	The Preferred Area lies entirely within the Green Belt but minerals working is unlikely to conflict with the purposes of Green Belt designation.
Groundwater vulnerability	**High**	The southern part of this Preferred Area is located within SPZ 1 and there are also substantial areas of SPZ 2 within the area.
Heritage designations	**Medium**	Whilst there are three Grade II listed buildings in Chapmore End, none of these are within or immediately adjacent to the Preferred Area. There is a possible area of archaeological interest within this Preferred Area.
International and national ecological designations	**Low**	This Preferred Area is not within close proximity to national or international ecological designations.

Criterion	Score (Impact)	Justification
Land ownership	**Medium**	The Preferred Area is within multiple ownership with part of the land subject to existing mineral rights.
Landscape designations	**Low**	This Preferred Area is not within or adjacent to any landscape designations.
Local Nature Reserves and Local Wildlife Sites	**Medium**	Upper Stonyhills Wood and Flowersash Wood Key Wildlife Sites lie partially within the Preferred Area. In addition, Lower Stonyhills Wood and Bardon Clumps Key Wildlife Sites lie adjacent to the Preferred Area.
Proximity of allocated residential or built development	**Low**	There are no sites for planned built development within proximity of this Preferred Area. Although it should be noted that the consultation on the East Herts pre-submission version of the Local Plan took place between November and December 2016. This version of the Plan includes Draft Policy Hert4 – a preferred residential development in close proximity MLPCS003.
Recreation	**High**	Several public rights of way cross this Preferred Area, including Bengeo Rural 014, Bengeo Rural 012, Bengeo Rural 022, Bengeo Rural 002 and Bengeo Rural 009.
Restoration	**Low**	The 2002-2016 Hertfordshire Minerals Local Plan Review suggests that proposals will need to demonstrate that there is a sufficient balance of material to achieve proposed restoration.
Sensitive land uses	**Medium**	The Preferred Area is in proximity to dwellings at Chapmore End, Dimmings, Stonyhill and the former Rickneys Farmhouse.
Sustainable transport	**High**	This Preferred Area is distant from the rail network and the navigable waterway network.
Sustainable transport and pollution to the environment (dust, air, water)	**Medium**	The Preferred Area is within proximity of the strategic road network. There is an AQMA in the centre of Hertford, but it is uncertain whether vehicles from minerals workings in the Preferred Area would use this route.
Summary of Sustainability Appraisal		
Summary of SA Findings (incorporating HRA findings)	The SA of this Preferred Area identifies significant negative effects against SA objectives 1.1 (biodiversity protection), 1.3 (biodiversity air pollution effects), 2.1 (historic environment), 4.1 (water quality) and 9.2 (recreation loss). Minor negative	

Criterion	Score (Impact)	Justification
	effects were identified against SA objectives 7.1 (recycling), 8.4 (agricultural land) and 9.1 (health and wellbeing). Positive or neutral effects were recorded against all other SA objectives, with the exception of SA objective 5.2 (energy efficiency), to which effects were uncertain. Overall, this assessment is broadly consistent with the site selection study assessment summarised above.	

Summary of Landscape and Visual Sensitivity Comments
Overall this site is considered to have a moderate sensitivity. Although landscape is gently undulating and the site is largely enclosed, the openness to the east could result in an adverse impact on the unified rural character of the wider river valley. Additionally, mineral workings could result in the loss of valuable landscape features including hedgerows and Ancient Woodland. Impacts could be partially mitigated by further screening and extraction operations set back from the ancient woodland. Views from properties and Rights of Way tend to be screened by hedgerows, tree groups and woodland, and could be mitigated through further planting.

Summary of HCC Highways Comments	**Score:**	
The area would be accessed via adjoining land at Rickney's Quarry. Further information/assessments is required to overcome **some highways concerns**. At this high level HCC has no reason to object to the site. However, further information is required in the form of a Transport Assessment detailing the existing operation at Rickney's Quarry, proposed trip generation and the impact this will have on local junctions especially the A602; a broader assessment of the collision data to take into account the proposed route for HGV movements; the access arrangement and suitability for increasing HGV movements in this location; and detailed information on the impact the proposals will have on the footpaths surrounding the site. It should also be noted that there are additional proposals for mineral extraction for the surrounding land. Therefore, any further assessment will need to consider the cumulative impact of the proposals on the network.		

Preferred Area 3 Proforma

Site Information

Description:	Land to the south-east of the existing Tyttenhanger Quarry
Area:	89 ha
Central Grid Ref.:	203646 519576
District:	Hertsmere District
Mineral to extract:	Sand and Gravel
Planning History:	The preferred area has been subject to two planning applications. 0/1353-06 for the eastern extension of existing quarry south of Coursers Road and progressive restoration using inert fill material. 0/0262-12 for the construction and operation of an Anaerobic Digestion facility.

Sieve 1

Constraint	Entirely or partly located within the constraint (Yes/No)	Justification
Urban areas	No	The area is not located within an existing urban area.
Sites with planning permission for other development	No	The area does not have planning permission for an incompatible use with a site area greater than 5ha.
Previously worked areas	Yes	The area has been worked.
Proceed to Sieve 2	Yes	
Justification	See above.	

Sieve 2

Criterion	Yes/No	Justification
• Within Resource Area?	No	The resource has been extracted by previous workings.
• Tonnage of Reserves Calculated?	Nil	See above.

Criterion	Yes/No	Justification
• Economic Viability	Nil	See above.
• Deliverability	Nil	See above.
• Other points to note:		
Suitability for consideration as a Preferred Area allocation, on resource grounds	No- the area comprises land to the south-east of the existing Tyttenhanger Quarry, almost all of which has now been worked, as extensions to that site. It should now be removed as a Preferred Area.	

Appendix 2

Hertfordshire Highways Department assessment of site options

Hertfordshire County Council

Highway Development Management

Minerals Local Plan Call for Sites Highways Review

Revised September 2017

Introduction

This background paper has been prepared by Hertfordshire County Council Highways Development Management, in order to provide the details of a high level highway review on sites put forward through the call for sites for the Minerals Local Plan review.

The paper was originally published in June 2017. This is a revised version, dated September 2017, which includes updates from two evidence sources to review the congestion hotspots:

- latest version of the base year County Transport Model (COMET version 3) &
- Current congestion hotspot plan (based on 15/16 Trafficmaster journey time data).

This is not a detailed assessment of the potential implications on the highway network as this would be more appropriate at the planning application stage, where a specific site can be assessed in detail and highway mitigations / improvements suggested if necessary.

General highways comments have been written for each of the 20 sites, and a traffic light ranking of red, amber, green and grey (for sites lacking information) has been used to determine the potential impact on the local highway network using the following grading set out in the table below:

Proposed sites that have no fundamental highway objection in principle. Mitigation measures identified in a site specific Transport Assessment may still be required though.	**Green**
Proposed sites where further information/assessments is required to overcome some highways concerns. A solution may be possible through mitigation measures set out in a site specific Transport Assessment that accompanies a planning application.	**Amber**
Proposed sites where significant concerns are identified, which are likely to attract highway objections. Further detailed analysis and suggested mitigation measures will need to accompany a planning application, in addition to a site specific Transport Assessment.	**Red**
Not able to be assessed due to a lack of information.	**Grey**

The transportation of minerals may initially involve the use of internal haul roads. However, once processed, the extracted minerals would require onward distribution onto the highway network. This may result in highway implications which would need to be investigated further as part of a planning application.

The highway impact of minerals development can be magnified if there are a number of permissions granted for mineral development within close proximity, or if permission to extract is extended, resulting in many years of extraction activity in one location. Mitigating measures might include such measures as the phasing of extraction operations so that one site is completed before a second commences, a restriction on the number of HGV movements or the timetabling of such movements, undertaking pre-extraction landscaping works to reduce cumulative, visual, noise and air quality impacts and addressing needed infrastructure improvements. Where cumulative impacts have not been, or are unable to be satisfactorily addressed, the Highway Authority could have grounds to refuse permission for that development.

It should be noted that this document is not a substitute for a full Transport Assessment that is required for sites that are subsequently allocated in the Minerals Local Plan. All planning applications should be supported by a Transport Statement or Transport Assessment, as set out in the Chapter 7 of Section 1 of the Hertfordshire County Council Highway Design Guide, Roads in Hertfordshire. In developments on sensitive locations where there is a significant highway safety/capacity concern and the potential trip generation is below the threshold for a Transport Assessment, the highway authority may ask for a detailed analysis in support of an application.

For any new access or significant alterations to an existing access, a Stage 1 Road Safety Audit must be carried out. Also, an access may be refused due to poor design/visibility or inadequate capacity. Therefore, it is difficult to provide specific comments on a sites suitability without access details and safety audit reports.

Site Number	Site Name	Highway Authority Assessment		Traffic Light
1	Cromer Hyde Farm	General Assessment	The suggested site abuts Marford Road (B653) to the north and Green Lanes to the east. Marford Road is a Classified Road B Secondary Distributor. Green Lanes is an unnumbered Classified Road – C, L2 Local Access road. Significant concerns have been identified for this site which are likely to attract highway objections. No information has been provided on the proposed access arrangements for the site. There is a school and a church located to the east of the site off Lemsford Village. More information on the proposed routing of HGV vehicles is required to assess whether there will be any safety implications for these existing land uses. In order to assess this site further HCC highways would require a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV vehicles). If this site were to be taken forward, it would also need to be assessed in relation to the potential cumulative impact of site 8 and site 9 to assess the impact on the network, this will also need to consider any phasing of extraction operations. Additionally, it should be noted that the site abuts another site which has been highlighted as a proposed housing allocation site for 2031 through the Welwyn Hatfield Proposed	**Red**

			Development Local Plan. However, the cumulative impact of this can only be assessed when more information on the phasing of extraction is provided.	
		Highway Impact	Marford Road is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified: • A1M Junction 5 with B197; • B197, Brocket Road and Coopers Green Lane roundabout • A6129 roundabout with Coopers Green Lane; and • B653 roundabout with B651. Delay and congestion within these locations, would need to be reviewed and mitigation measures may ultimately be sought.	**Red**
		Collision Data	Within the last 5 year period there have been a total of 12 collisions resulting in slight injuries on Marford Road within direct proximity of the site. Five of these collisions occurred at the intersection of Marford Road and Green Lanes. Whilst not identified as a hazardous site (6 or more collisions) further review of this junction will be required to illustrate that there are no safety issues.	**Amber**
		Vulnerable Road Users	Pedestrians - A narrow footway is present along Marford Road which is segregated from the carriageway by a grass verge. Any HGV routing will need to consider impacts on pedestrians, and particularly children if routing is via Lemsford Village as a School and Church are present. Measures will need to be identified to protect such road users.	**Amber**

			Cyclists - There are currently no on carriageway provisions for cyclists and the speed limit is 60mph within the vicinity of the site. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them. Public Transport Users – There are bus stops located along Marford Road, which at present comprise a flag only. Additional measures may be required to protect users at the stop from additional large vehicles.	
		AQMA	The site is not located within an Air Quality Management Area. However, routing information is required to demonstrate that operations will not travel through an AQMA.	**Green**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints, the appropriateness of using Lemford Village and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way (PROW). PROW 50 and 55 are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**

		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
2	Land at Salisbury Hall	General Assessment	The site is located on agricultural land. The Colney Fields Shopping Park is located north of the M25. Significant concerns have been identified for this site which are likely to attract highway objections. It is suggested by the site promoter that mineral HGV transportation movements from the proposed site to the Tyttenhanger processing plant site would use the B556 and the A414. This would mean that all HGV movements would be directed through the A1081/B556 roundabout. This roundabout also serves as a key access point for vehicles travelling to the Colney Fields Shopping Park. Therefore, the cumulative impact of the vehicles associated with the site and M25 junction 22 with the vehicles generated by the Colney Fields Shopping Park would need to be assessed to determine whether this routing arrangement is feasible. In order to assess this site further HCC highways would require a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV movements).	**Red**

			Additionally, it should be noted that this site is within close proximity of the proposed Radlett Rail Freight Interchange and should therefore should be considered in regards cumulative impacts and to the changes of the network associated with the Radlett Rail Freight Interchange.	
		Highway Impact	Ridge Hill is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. The Bell Roundabout is also considered as a traffic sensitive route between 05:00-22:00, Monday to Sunday. These issues will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified: • A1081 roundabout (Bell Roundabout) • A414 roundabout with A1081. Delay and congestion is identified at these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	**Red**
		Collision Data	The Bell Roundabout and the A414 roundabout with A1081 have been identified as hazardous junctions. Therefore, further assessment would be required to demonstrate the safety implications along the HGV route	**Red**
		Vulnerable Road Users	Pedestrians - A narrow footway is present along Ridge Hill which is segregated from the carriageway by a grass verge. The HGV routing suggests that vehicles will use The Bell Roundabout which serves the London Colney retail area. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users.	**Amber**

			Cyclists - There are currently no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. It should be noted that Public Right of Way 13 which is adjacent to the site is also identified as an off road cycleway, which is access via Ridge Hill. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them. Public Transport Users – There are bus stops located along Ridge Hill, which at present comprise a flag only. Additional measures may be required to protect users at the stop from additional large vehicles.	
		AQMA	The site is not located within an Air Quality Management Area. However, routing information is required to demonstrate that operations will not travel through an AQMA.	**Green**
		HGV Routing	It is suggested by the site promoter that mineral HGV transportation movements from the proposed site to the Tyttenhanger processing plant site would use the B556 and the A414. This would mean that all HGV movements would be directed through The Bell Roundabout. This roundabout also serves as a main access point for vehicles travelling to the Colney Fields Shopping Park. Therefore, the cumulative impact of the vehicles associated with the site with the vehicles generated by the Colney Fields Shopping Park would	**Red**

			need to be assessed to determine whether this routing arrangement is feasible. It is recommended that route options are discussed with HCC at an early stage.	
		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way (PROW). PROW 27 and 13 are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
3	Land at Ware Park	General Assessment	The site promoter suggests access directly onto Wadesmill Road with all traffic to and from the North via the A602- majority of output would be via the A10/A602 junction. Wadesmill Road is a numbered classified secondary distributor road with a speed limit of 60mph and a 7.5 tonne weight limit. The site promoter submitted an application (ref: PL0776/16), which was accompanied by a Transport Statement (TS). The application was refused on 4th March 2016. Whilst, the application was refused after additional amendments HCC highways did not raise an objection to the proposals subject to conditions.	**Green**

		Highway Impact	Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and has identified the following congestion hotspot: • A602 Ware Road/A602 Westmill Road/Wadesmill Road/Anchor Lane Roundabout. As part of the application an assessment was requested to be undertaken at the roundabout. The capacity assessment however demonstrated that the junction operates within capacity in 2017 base scenario and the development traffic (which only adds 12 two way trips on the network) has a negligible impact. This junction is also going to be improved as part of the proposed A602 improvement scheme granted in 2016 which is now under construction.	**Green**
		Collision Data	Personal Injury Collision Data (PIC) was obtained for a 5 year period between 2010-2015, the area considered the B158 Wadesmill Road from the northern extent of the built up area of Hertford to the roundabout junction with the A602. The study indicated 13 collisions of these 13 collisions one resulted in a fatality, one serious and 11 slight. The TS investigated the fatality and found this was due to a motorcyclist travelling at excessive speeds combined with poor indication by the taxi. Additional collision data was originally requested. However, as part of additional information submitted HCC concluded there was no safety	**Amber**

			issue exacerbated by the proposals providing suitable conditions were applied.	
		Vulnerable Road Users	Pedestrians – Permissive paths were proposed along the eastern field edge and along the farm track. However, no additional information was provided. Cyclists - There are currently no on carriageway provisions for cyclists. Wadesmill Road is not suitable for cyclists due to the 60mph speed limit. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them. Public Transport Users – The nearest bus stops to the site are located to the south of Bengeo Street, approximately 800 metres from the proposed site access junction. This services route 333 which has an hourly circular service from Bengeo to Hertford between Monday and Saturday.	**Amber**
		AQMA	One of the reasons for refusal related to Air Quality and stated: “The proposal has not demonstrated that the development would not have a detrimental impact on Air Quality.”	**Red**
		HGV Routing	In order to prevent the HGV traffic from the site travelling through Hertford the applicant was required to enter into a routing agreement which will require HGVs to right into the site and turn left out of the site. HCC’s Network Management Team were also consulted on the routing arrangements and raised no objections.	**Amber**

		Public Footpaths	As part of the application process the Public Rights of Way team were contacted due to the proposals impacting on Footpath 1. Their comments were as follows: "Footpath Route 1 – not possible to leave this route safely in its current location, it will need to be temporarily diverted under the Minerals Act. If it cannot be reinstated after the works in its current location, width and level, a permanent diversion order will be required as well." The impact on Public Footpaths also formed a reason for refusal and the decision notice set out the following: "The proposal would have a negative impact upon the existing rights of way and users of these rights of way that cross the site including for Health Walks…"	**Red**
		Highway Condition	A Section 106 Agreement was requested to secure a condition survey in order to assess the condition of the highway within the vicinity of the site before the construction of the development and an updated version will be required at the completion stage.	**Amber**
4	Land at Pynesfield		The proposed site is located on agricultural land. The A412 runs to the east of the site and Tilehouse Lane borders the site to the North and West. The site is roughly 17ha of which 9ha would be for the extraction of minerals. The surrounding area is open Green Belt land with little other development in the area. Access to the site is from Tilehouse Lane which has a junction access to A412. Tilehouse Lane is a rural access lane with narrow width and hedges either side.	**Green**

			The A412 is known locally as the North Orbital Road which forms part of the local strategic highway network and connects with M40 to the South and M25 (junction 17) to the north. A412 is of average 9m wide with grass verges wither side with a speed limit of 50 mph near the site HCC highways commented on the planning application for this site under reference 8/1254-15. During this consultation HCC highways did not wish to object subject to conditions regarding vehicle restrictions, the impact of construction vehicles onto the local area and also a routing agreement. Planning application has since been permitted and is being monitored through the Development Management process.	
5	Nashes and Fairfolds Farm		The site is proposed for the extraction of sand and gravel within the next 1 to 5 years. The access is proposed either direct to House Lane or via the adjacent Hatfield Quarry. House Lane is a local distributor road subject to a 30mph speed limit and a weight restriction of 7.5 tonnes. House Lane is narrow road and not suitable for HGV movements and therefore the site poses significant highways concerns. More information is required for HCC highways to assess the site including a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV movements). Additionally, as part of any application, information on the proposed access arrangement will be required so that HCC can assess its feasibility.	**Red**

		Highway Impact	House Lane is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Whilst there are no congestion hotspots within the immediate vicinity of the site. Further information regarding HGV routing will be required and considered against the wider COMET model to ensure the route does not impact on the wider network congestion hot spots.	**Amber**
		Collision Data	No hazardous junctions have been highlighted within the immediate vicinity of the site. However, further information and assessment will be required for the HGV routing to ensure the safety of the highway network.	**Amber**
		Vulnerable Road Users	Pedestrians - A narrow footway is present along House Lane between the roundabout with Sandpit Lane and the roundabout with Sandringham Crescent, which is segregated from the carriageway by a grass verge. There is no footway present beyond Sandringham Crescent. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists and House Lane is subject to a 30mph speed limit. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. It should be noted that Public Right of Way 10 which is adjacent to the site is also identified as an off road cycleway. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians	**Amber**

			and cyclists. Suitable promotional materials should also be considered to encourage users on them.	
		AQMA	The site is not located within an Air Quality Management Area. However, routing information is required to demonstrate that operations will not travel through an AQMA.	**Green**
		HGV Routing	The access is proposed either direct to House Lane or via the adjacent Hatfield Quarry. House Lane is a local distributor road subject to a 30mph speed limit and a weight restriction of 7.5 tonnes. House Lane is narrow road and not suitable for HGV movements and therefore the site poses significant highways concerns. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way (PROW). PROW 10 is likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
6	Hatfield Aerodrome		This site is currently an allocated site in the 2007 Minerals Local Plan.	**Amber**

			The applicant submitted a planning application on 3rd February 16 (reference: PL\0755\16), which is currently being considered. A transport statement accompanied the application and confirmed the following: • The site promoter has stated that most of HGV traffic would route to the east towards the A1(M); • The site promoter states access onto the A1057. A preliminary design has been prepared to accompany the current planning application; and • There will be no more than 174 HGV Daily Movements (87 in, 87 out). HCC has considered the information provided and concluded that they did not raise an objection subject to suitable conditions being applied.	
		Highway Impact	Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspot has been identified: • Hatfield Road/Comet Way junction. The Hatfield Road/Ellenbrook Road junction has also been flagged up as a potential problem location. In order to mitigate these congestion hotspots it was requested that contributions towards improvements be sought and secured via a S106 Agreement. As part of the application submission the applicant proposed a new junction arrangement. Junction modelling was undertaken for 2022 and demonstrated that the junction would operate within capacity.	**Amber**

		Collision Data	The applicant provided collision data for 5 year period up to 31st May 2016. The collision data did not highlight any issues that would be exacerbated by the development.	**Green**
		Vulnerable Road Users	Pedestrians – A footway is located on the southern side of Hatfield Road. As part of the application HCC the Operations & Strategy Team were consulted and requested that the footway be widened. It was also requested that a S278 Agreement will be required for improvements to pedestrian facilities along Hatfield Road (A1057) and for improved pedestrian links between the site and Alban Way. Additionally, a pedestrian crossing will be required from the existing footway on Hatfield Road into the proposed site access. Cyclists - There are no on carriageway provisions for cyclists along Hatfield Road. Public Transport – The nearest bus stops to the site are located on Hatfield Road (A5107), approximately 200 metres from the proposed site access. This services routes 300, 301, 303, 330, 601, 602 and 653.	**Amber**
		AQMA	The site is not located within an Air Quality Management Area. Further information regarding Air Quality was not sought as part of the application process.	**Green**
		HGV Routing	As part of HCCs response to the planning application submission the following condition was requested: Prior to the commence of any works hereby permitted, a HGV routing plan detailing that all movements will be along Hatfield Road towards Comet Way (A1001), shall be submitted to and approved in writing with	**Amber**

			the Local Planning Authority in consultation with the Local Highway Authority. For the duration of the use of the site all traffic associated with the development will comply with the HGV Routing Plan and use only the 'HGV Access Route' and no other local roads unless approved in writing with the Local Planning Authority in consultation with the Highway Authority.	
		Public Footpaths	The Public Rights of Way Team (PROW) have been consulted as part of the application process, and the following condition was requested: • Before commencement of the development, additional plans must be submitted to and approved in writing by the Local Planning Authority, in consultation with the Highway Authority, which show the following detailed design and construction of works to public right of way route: - Upgrading / hard surfacing for the new public bridleways, as per the attached HCC Rights of Way Good Practice Guide Surfacing Specifications; - Providing a safe and level access of a width and design suitable to accommodate wheelchair users, as well as cyclists and horse riders for the new public bridleways within the site. - All works as shown on the submitted plans shall be completed to the satisfaction of the Local Planning Authority before first occupation of the development.	**Amber**
		Highway Condition	The mineral extraction and HGV movements will create long-term highway maintenance expense to the County Council. Therefore, a S106 Agreement will be required to secure a Condition Survey in order to assess the condition of the highway within the vicinity of the site before the construction of the development and an updated version will be required at completion stage. Where the development as a result of	**Amber**

			construction is likely to increase road degradation a highway £30,000 bond should be secured via a Section 106 Agreement prior to commencement on site.	
7	Barwick Farm		The site is proposed for the extraction is for sand, gravel, and other minerals within the next 1 to 5 years. The site is located within agricultural land. No information has been provided on proposed access points or HGV routing. Due to a lack of information the site cannot be assessed. However, it should be noted that the cumulative impacts of the site may need to be reviewed in relation to Site 15 (Plashes Farm) in order to assess the impact on the network. Further detailed analysis will need to be provided in a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV vehicles). Additionally, information on the proposed access arrangement will be required so that HCC can assess its feasibility.	**Grey**
		Highway Impact	No details on access arrangements or routing have been provided and on this basis an assessment is not possible. It should however, be noted that the A10/ Westmill Road roundabout and A10 junction with A120 have been identified as congestion hotspots. Therefore any future proposals will need to take account of this.	**Grey**
		Collision Data	No hazardous junctions have been highlighted within the immediate	**Amber**

			vicinity of the site. However, further information and assessment will be required for the HGV routing to ensure the safety of the highway network.	
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there are no footways present. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	**Red**
		AQMA	The site is not located within an Air Quality Management Area, further information is required regarding the routing of HGVs to ensure that they do not enter the AQMA zone.	**Amber**
		HGV Routing	No information has been provided regarding the HGV routing to the site. HCC have concerns regarding the narrow roads surrounding the site and the highlighted junctions which incur congestion issues but it is not clear at this stage whether this will ultimately be an issue. It is recommended that route options are discussed with HCC at an early stage.	**Grey**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way	**Amber**

			(PROW). PROWs 60, 62, 45 and 58 could be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
8	Hatfield Furze Field	General Assessment	The Hatfield Furze Field site is proposed as an extension to the existing Hatfield Quarry. There is an existing access off Oaklands Lane. The applicant submitted a planning application in November 16 (reference: 5/3720-16), which is currently being considered. A transport statement accompanied the application and confirmed the following: • The site promoter has stated that as part of a previous planning consent a maximum of 250 HGV movements can be associated with the site • The site promoter states access at the site would remain at Hatfield Quarry from Oaklands Lane; and • HGV movements turn left from Oaklands Lane onto the A1057 Hatfield Road and then the A1 (M) via Comet Way. HCC has considered the information provided and concluded that they did not raise an objection subject to suitable conditions being applied.	**Amber**

		Highway Impact	Access will be retained at Hatfield Quarry from Oaklands Lane. The proposals seek to use 166 HGV movements per day (83 in, 83 out). The existing permission allows up to 250 movements per day. As part of the TS an assessment was considered on the highway network and it was demonstrated that the movements would be negligible. On this basis HCC did not raise an objection providing a condition was reapplied restricting the number of HGV movements to 250 per day.	**Green**
		Collision Data	No hazardous junctions were highlighted within the immediate vicinity of the site.	**Green**
		Vulnerable Road Users	Pedestrians – There are no pedestrian facilities within the vicinity of the site. Cyclists - There are no on carriageway provisions for cyclists. Public Transport – The nearest bus stops serving site are located on the A1057 Hatfield Road approximately 1km from the quarry access. These bus shelters have seating and timetable information.	**Green**
		AQMA	The site is not located within an Air Quality Management Area. Further information regarding Air Quality was not sought as part of the application process.	**Green**
		HGV Routing	HGV movements at present turn left from Oaklands Lane onto the A1057 Hatfield Road and then the A1 (M) via Comet Way. It is	**Green**

			anticipated that this route would still be undertaken.	
		Public Footpaths	Designated Public Rights of Way through the Hatfield Quarry include Bridleway 1 and 48. There are also designated footpaths (52 and 14) traversing the quarry. Footpath 33 runs along the northwest –southeast axis adjacent to Hatfield Avenue on the southern boundary of the site.	**Green**
		Highway Condition	The mineral extraction and HGV movements will create long-term highway maintenance expense to the County Council. Therefore, a S106 Agreement will be required to secure a Condition Survey in order to assess the condition of the highway within the vicinity of the site before the construction of the development and an updated version will be required at completion stage. Where the development as a result of construction is likely to increase road degradation a highway £30,000 bond should be secured via a Section 106 Agreement prior to commencement on site.	**Amber**
9	Land adjoining Coopers Green Lane		The site is proposed as an extension to the existing Hatfield Quarry. It is suggested that material would continue to be processed at the established processing plant area at Hatfield quarry. Sand and Gravel would be transported to the existing plant site via conveyer. The existing access off Oaklands Lane would continue to export all sand and gravel via HGV. It is proposed that operations would be likely to begin in the next 1 to 5 years (succeeding the Hatfield Furze Field site). As stated previously, information on the proposed trip generation is required so that HCC highways can assess what impact the additional HGV movements will	**Amber**

			have on the network. As stated above it should be noted that there are additional sites for mineral extraction for the surrounding land (Site 1, Site 5, Site 6 and Site 8). Therefore, any further assessment will need to consider the cumulative impact of the sites on the network. Further information is required on the phasing of extraction operations in order to assess this. Public Rights of Way may need to be diverted. As such, the HCC's Public Rights of Way Team would also need to be consulted. Additionally, the site has been highlighted as a proposed Housing Allocation Site for 2031.	
		Highway Impact	Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified: • A1M Junction 5 with B197; • A6129 roundabout with Coopers Green Lane; • A1M Junction 4 • The Galleria roundabout; and • A414 junction with A1M Junction 3. Delay and congestion is identified at these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	**Red**
		Collision Data	The junctions set out above as congestion hotspots are also considered to be hazardous junctions and will need to be reviewed as part of any application.	**Red**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there are no footways present. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to	**Red**

			protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	
		AQMA	The site is not located within an Air Quality Management Area. However, routing information is required to demonstrate that operations will not travel through an AQMA.	**Green**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way (PROW). PROW 41, 42 and 37 are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that the carriageway is provided at	**Amber**

			an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	
10	The Briggens Estate		The site is currently in agricultural use and forms part of The Briggens Estate situated immediately to the north of the A414 and west of Harlow. The site promoter sets out that access is anticipated to be taken via Roydon Road (B181) with HGV movements directed to the A414. Roydon Road is frequently congested in the southbound direction with queuing back from the Roydon level crossing and the positioning of the access arrangements would need careful consideration. Additionally, discussions with HCC Highways Network Management would be required regarding the HGV route and weight restrictions on the network.	**Amber**
		Highway Impact	B180 Hunsdon Road and B181 Stanstead Abbotts High Street are identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified: • A414 junction with A10; • A414 junction with B1502/ A1170; and • B181 Roydon Road (southbound).	**Red**

			Delay and congestion are apparent within these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	
		Collision Data	The junctions set out above as congestion hotspots are also considered to be hazardous junctions and will need to be reviewed as part of any application.	**Red**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there are no footways present. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	**Red**
		AQMA	The site is not located within an Air Quality Management Area. However, routing information is required to demonstrate that operations will not travel through an AQMA.	**Green**
		HGV Routing	The site promoter sets out that access is anticipated to be taken via Roydon Road (B181) with HGV movement directed to the A414. Therefore, any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**

		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way (PROW). PROW 21 and 23 are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that the carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
11	Water Hall Farm Fields Area		The proposed rate of extraction is 170,000 tonnes per year and duration of operation until completion 5.5 years. The B158/B1455 junction has existing congestion problems. Therefore, the impact of this site requires further investigation. It is stated that minerals can be carried over private land directly to the processing plant at Water Hall. It should be noted that the material extracted from this site will be processed at Water Hall. This being the case the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. The site would need to be assessed in relation to the potential cumulative impact of sites 12, 14, 16, 17, 18 and 19 to assess the impact on the B158. In order to assess the cumulative impacts further information on phasing and timing of the mineral extraction would be	**Amber**

			required.	
		Highway Impact	B158 is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified: • A414 junction with B1455; • B158 junction with B1455; and • B158 junction with Gascoyne Way. Delay and congestion has been identified within these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	**Red**
		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, junctions towards Hertford Town Centre are identified as hazardous and therefore any HGV route will need to consider this.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there is a very narrow footway on one side of the carriageway along the B158. However, abuts the carriageway and pedestrians are not protected in any way from vehicles travelling along this route. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the	**Red**

			proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	
		AQMA	Further information is required for routing but this site has the potential to impact on the AQMA zone around Hertford Town Centre.	**Amber**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, that are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**

12	Water Hall Broad Green		It is proposed that the rate of extraction would be 150,000 tonnes per year and the duration of operation until completion 3 years. It is proposed that mineral would be carried over private land, through Bunkers Hill Quarry, across Lower Hatfield Road directly to the processing plant at Water Hall. The B158/B1455 junction has existing congestion problems. Therefore, the impact of this site could contribute towards a cumulative impact which requires further investigation. It should be noted that the material extracted from this site will be processed at Water Hall. This being the case the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. The site will need to be assessed in relation to the potential cumulative impact of sites 11, 14, 16, 17, 18 and 19 to assess the cumulative impact on the B158. In order to assess the cumulative impacts further information on phasing and timing of the mineral extraction would be required.	**Amber**
		Highway Impact	B158 is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified:	**Red**

			• A414 junction with B1455; • B158 junction with B1455; and • B158 junction with Gascoyne Way. Delay and congestion has been identified within these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	
		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, junctions towards Hertford Town Centre are identified as hazardous and therefore any HGV route will need to consider this.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there is a very narrow footway on one side of the carriageway along the B158. However, abuts the carriageway and pedestrians are not protected in any way from vehicles travelling along this route. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	**Red**

		AQMA	Further information is required for routing but this site has the potential to impact on the AQMA zone around Hertford Town Centre.	**Amber**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, that are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
13	Harry's Field Bovingdon Brickworks		The proposed site is for the extraction of brick and clay. The site is within agricultural land. To the south east of the site there is another site which has been subject to a planning application (Ref: 4/2819-15). HCC highways provided comments on this application and did not wish to object subject to suitable conditions.	**Amber**

			It is proposed that the Harry's Field site would use the same access route that would be constructed under the planning consent of 4/2819-15. Therefore, the access arrangement would be subject to the conditions outlined in the Decision Notice for 4/2819-15. Additionally, as part of this site the site promoter would need to provide additional information on the number of HGV movements the site will generate in order to determine what level of impact the additional HGV movements will have on the network and whether the intensification of the proposed access is acceptable.	
		Highway Impact	No congestion hotspots have been identified within the immediate locality of the site. However, further HGV routing information is required to ensure the routing does not have a wider impact on the highway network.	**Amber**
		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, further HGV routing information is required to ensure the routing does not create wider safety issues on the highway network.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there are no footways present. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. It should also be noted that there is an off road cycleway located via Shantock Hall Lane and this is accessed via Ley Hill Road.	**Red**

			Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	
		AQMA	The site is not located within an Air Quality Management Area. However, routing information is required to demonstrate that operations will not travel through an AQMA.	**Green**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way (PROW). PROW 6 and 7 are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
14	Bunkers Hill South		The proposed site is within existing greenfield agricultural land. The proposed site area is adjacent an existing processing plant area at Water Hall Quarry which is located on Lower Hatfield Road.	**Amber**

			Lower Hatfield Road is a Classified B, Secondary Distributor. It should be noted that the B158/B1455 junction has existing congestion problems. Therefore, the impact of this site could contribute towards a cumulative impact which requires further investigation. It is stated that the minerals would be carried over private land, through Bunkers Hill Quarry, across Lower Hatfield Road directly to the processing plant. This would result in an increase of HGV vehicles crossing Lower Hatfield Road which could lead to congestion and safety issues along this route. Further information is required with regards to the level of intensification the site would create at this access and also information on how this would be managed with the existing services. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV movements). Additionally, as part any application, details on the proposed access arrangement will be required so that HCC can assess its feasibility. The proposed access road would be via a 50m concrete access road. The internal haul road would be surfaced with gravel. Wheel washing facilities, weighbridge and offices will be provided. There is existing speed reduction signage along Lower Hatfield Road. It should be noted that the material extracted from this site will be processed at Water Hall. This being the case the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past.	

			The site will need to be assessed in relation to the potential cumulative impact of sites 11, 14, 16, 17, 18 and 19 to assess the cumulative impact on the B158. However, the cumulative impact of this can only be assessed when more information on the phasing of extraction is available.	
		Highway Impact	B158 is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified:: • A414 junction with B1455; • B158 junction with B1455; and • B158 junction with Gascoyne Way. Delay and congestion is identified within these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	**Red**
		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, junctions towards Hertford Town Centre are identified as hazardous and therefore any HGV route will need to consider this.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there is a very narrow footway on one side of the carriageway along the B158. The footway abuts the carriageway and pedestrians are not protected in any way from vehicles travelling along this route. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need	**Red**

			to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	
		AQMA	Further information is required for routing but this site has the potential to impact on the AQMA zone around Hertford Town Centre.	**Amber**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, that are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
15	Plashes Farm		Proposed access onto Gore Lane with the HGV movements directed to the A10. It is proposed that the site access would consist of a concrete access	**Amber**

			road with the internal haul road surfaced with gravel. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV movements). Additionally, as part any application, details on the proposed access arrangement will be required so that HCC can assess its feasibility. Discussions with HCC highways would be required to determine the level of improvements would be required/appropriate for Gore Lane. It should be noted that the cumulative impacts of the site may need to be reviewed in relation to Site 7 (Barwick Farm) in order to assess the cumulative impact on the network.	
		Highway Impact	It is understood that the access arrangements are proposed via Gore Lane. Gore Lane is a narrow road with restricted widths and HCC raises concerns regarding the suitability of this route for HGV traffic. It should however, be noted that the A10/ Westmill Road roundabout and A10 junction with A120 have been identified as congestion hotspots. Therefore any future proposals will need to take account of this.	**Amber**
		Collision Data	No hazardous junctions have been highlighted within the immediate vicinity of the site. However, further information and assessment will be required for the HGV routing to ensure the safety of the highway network.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there are no footways present. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to	**Red**

			protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	
		AQMA	The site is not located within an Air Quality Management Area. However, routing information is required to demonstrate that operations will not travel through an AQMA.	**Amber**
		HGV Routing	No information has been provided regarding the HGV routing to the site. HCC Highways have concerns regarding the narrow roads surrounding the site and the highlighted junctions which incur congestion issues but it is not clear at this stage whether this will ultimately be an issue. It is recommended that route options are discussed with HCC at an early stage.	**Grey**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way (PROW). PROWs 60, 62, 45 and 58 could be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure	**Amber**

			that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	
16	Howe Green		It is proposed that the rate of extraction would be 150,000 tonnes per year and duration of operation until completion 6.5 years. No details of access arrangements have been provided. If access is proposed to be from Robins Nest Hill, it is anticipated that improvements will be required to accommodate the proposal. It should be noted that the material extracted from this site will be processed at Water Hall. This being the case the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV movements). Additionally, as part any application, details on the proposed access arrangement will be required so that HCC Highways can assess its feasibility. The site will need to be assessed in relation to the potential cumulative impact of sites 11, 12, 14, 17, 18 and 19 to assess the cumulative impact on the B158. In order to assess the cumulative impacts further information on phasing and timing of the mineral extraction would be required.	**Grey**

			It should be noted that the B158/B1455 junction has existing congestion problems. Therefore, the impact of this site could contribute towards a cumulative impact which requires further investigation.	
		Highway Impact	B158 is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified:: • A414 junction with B1455; • B158 junction with B1455; and • B158 junction with Gascoyne Way. Delay and congestion is identified within these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	**Red**
		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, junctions towards Hertford Town Centre are identified as hazardous and therefore any HGV route will need to consider this.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there is a very narrow footway on one side of the carriageway along the B158. The footway abuts the carriageway and pedestrians are not protected in any way from vehicles travelling along this route. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need	**Red**

			to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	
		AQMA	Further information is required for routing but this site has the potential to impact on the AQMA zone around Hertford Town Centre.	**Amber**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, that are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**

17	Robins Nest Hill		The proposed rate of extraction is 150,000 tonnes per year. Duration of operation until completion 6.5 years. It should be noted that the B1455 junction has existing congestion problems. Therefore, the impact of this site could contribute towards a cumulative impact which requires further investigation. Robins Nest Hill has constraints which could be overcome by modest highway improvements. Thereafter transport either through restored Pollards Wood area or by Lower Hatfield Road to Water Hall processing area. It should be noted that the material extracted from this site will be processed at Water Hall. This being the case the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV movements). Additionally, as part any application, details on the proposed access arrangement will be required so that HCC can assess its feasibility. The site will need to be assessed in relation to the potential cumulative impact of sites 11, 12, 14, 16, 18 and 19 to assess the cumulative impact on the B158. However, the cumulative impact of this can only be assessed when more information on the phasing of extraction is available.	**Amber**
		Highway Impact	B158 is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be	**Red**

			considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified: • A414 junction with B1455; • B158 junction with B1455; and • B158 junction with Gascoyne Way. Delay and congestion is identified within these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	
		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, junctions towards Hertford Town Centre are identified as hazardous and therefore any HGV route will need to consider this.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there is a very narrow footway on one side of the carriageway along the B158. The footway abuts the carriageway and pedestrians are not protected in any way from vehicles travelling along this route. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians	**Red**

			and cyclists. Suitable promotional materials should also be considered to encourage users on them.	
		AQMA	Further information is required for routing but this site has the potential to impact on the AQMA zone around Hertford Town Centre.	**Amber**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, that are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
18	Southfield Wood		It is stated that the rate of extraction would be 150,000 tonnes per year and the duration of operation until completion 3.3 years. It should be noted that the B158/B1455 junction has existing congestion problems. Therefore, the impact of this site could contribute towards a	**Amber**

			cumulative impact which requires further investigation. Access would be directly over company land to Water Hall processing area. Additionally, it should be noted that the material extracted from this site will be processed at Water Hall. This being the case the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV movements). Additionally, as part any application, details on the proposed access arrangement will be required so that HCC can assess its feasibility. The site will need to be assessed in relation to the potential cumulative impact of sites 11, 12, 14, 16, 17, and 19 to assess the cumulative impact on the B158. However, the cumulative impact of this can only be assessed when more information on the phasing arrangements of the extraction is available.	
		Highway Impact	B158 is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified: • A414 junction with B1455; • B158 junction with B1455; and • B158 junction with Gascoyne Way.	**Red**

			Delay and congestion is identified within these locations, which would need to be reviewed and mitigation measures may ultimately be sought.	
		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, junctions towards Hertford Town Centre are identified as hazardous and therefore any HGV route will need to consider this.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there is a very narrow footway on one side of the carriageway along the B158. The footway abuts the carriageway and pedestrians are not protected in any way from vehicles travelling along this route. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	**Red**
		AQMA	Further information is required for routing but this site has the potential to impact on the AQMA zone around Hertford Town Centre.	**Amber**

		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, that are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
19	Pipers End		It is stated that the rate of extraction would be 150,000 tonnes per year and the duration of operation until completion 9.3 years. It is proposed that the access would be directly over company land to Water Hall processing area. It should be noted that the B158/B1455 junction has existing congestion problems. Therefore, the impact of this site could contribute towards a cumulative impact which requires further investigation. It should be noted that the material extracted from this site will be	**Amber**

			processed at Water Hall. This being the case the amount of traffic generated by Water Hall will need to be carefully assessed to ensure that the level of traffic does not exceed that accepted in the past. Further information is required in the form of a Transport Assessment detailing the proposed trip generation and the impact of the network (including the proposed routing of HGV movements). Additionally, as part any application, details on the proposed access arrangement will be required so that HCC can assess its feasibility. The site will need to be assessed in relation to the potential cumulative impact of sites 11, 12, 14, 16, 17 and 18 to assess the cumulative impact on the B158. In order to assess the cumulative impacts further information on phasing and timing of the mineral extraction would be required.	
		Highway Impact	B158 is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. Current Trafficmaster based journey time data and the Countywide strategic highway model COMET have also been reviewed and the following congestion hotspots have been identified: • A414 junction with B1455; • B158 junction with B1455; and • B158 junction with Gascoyne Way. Delay and congestion is identified within these locations, which would need to be reviewed and mitigation measure may ultimately be sought.	**Red**

		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, junctions towards Hertford Town Centre are identified as hazardous and therefore any HGV route will need to consider this.	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there is a very narrow footway on one side of the carriageway along the B158. The footway abuts the carriageway and pedestrians are not protected in any way from vehicles travelling along this route. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	**Red**
		AQMA	Further information is required for routing but this site has the potential to impact on the AQMA zone around Hertford Town Centre.	**Amber**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early	**Red**

			stage.	
		Public Footpaths	There are a number of footpath and tracks within the location of the site, that are likely to be affected and the impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	**Amber**
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**
20	Roundhill Wood		The site is currently used for commercial forestry. The proposed site is for the extraction of brick clay. The whole site area comprises 41 hectares. However, the specific area of potential clay extraction within this 41 hectares is much smaller. The site is bounded by Cholesbury Road to the south, Chesham Road to the east and Kiln Road to the west. One serious collision occurred on Cholesbury Road in 2013. A slight collision occurred at the junction of Cholesbury Road and Chesham Road in 2015. However, these two collisions do not indicate a significant existing road safety issue on the immediate network. The site promoter states that there is an existing access through double gates via Cholesbury Road. No information has been provided on the	**Amber**

			dimensions or visibility of the existing gates. As part of any application, details on the proposed access arrangement will be required so that HCC Highways can assess its feasibility. The site promoter states that there are a number of public footways which cross the wider site. Therefore, HCC Public Right of Way Team would need to be consulted. The site promoter states that the clay would be worked on a campaign basis which could amount to 28 days within a single year. The site promoter estimates that this would result in traffic volumes of approximately 22 two-way movements per day. However, further information in the form of a Transport Assessment would be required to justify this volume of vehicle movements. Additionally, further information is required on the times these vehicle movements would take place. It is understood that vehicle movements would likely remain in the local area. However, further information on the proposed routing of HGV movements would be required to determine the potential impact on the network.	
		Highway Impact	Cholesbury Road is identified as a traffic sensitive route particularly during the hours of 07:00-09:30 and 16:00- 18:30, Monday to Friday. This will need to be considered as part of any assessment. No congestion hotspots have been identified within the immediate locality of the site. However, further HGV routing information is required to ensure the routing does not have a wider impact on the highway network.	**Amber**

		Collision Data	There are no hazardous sites identified within the immediate locality of the site. However, further HGV routing information is required to ensure the routing does not create wider safety issues on the highway network	**Amber**
		Vulnerable Road Users	Pedestrians – The routes surrounding the site are narrow and there are no footways present. On this basis, any HGV routing will need to consider impacts on pedestrians. Measures will need to be identified to protect such road users. Cyclists - There are no on carriageway provisions for cyclists. It will need to be identified as part of any development whether cyclists use the proposed HGV route and what measures will be provided to protect these road users. Further investigations are required to establish possible parallel routes/ upgrading existing routes to improve accessibility for both pedestrians and cyclists. Suitable promotional materials should also be considered to encourage users on them.	**Red**
		AQMA	The site is not located within an Air Quality Management Area. However, routing information is required to demonstrate that operations will not travel through an AQMA.	**Green**
		HGV Routing	No details regarding HGV routing has been provided. Any routing will need to demonstrate the suitability of the route in terms of the highway capacity constraints and the impact on other road users. It is recommended that route options are discussed with HCC at an early stage.	**Red**
		Public Footpaths	There are a number of footpath and tracks within the location of the site, although some of these do not appear to be Public Rights of Way (PROW). PROW 7, 8 10 and 11 are likely to be affected and the	**Amber**

			impacts of the developments on these routes should be considered. Diversion routes may ultimately be possible but options will need to be explored.	
		Highway Condition	A condition survey will be required as part of any development to ensure that the highway is maintained and restored to an acceptable level. Extent of survey is to be agreed with HCC and a bond may ultimately be sought. HCC may ultimately request that that carriageway is provided at an appropriate level / specification to be able to carry the traffic associated with the activities in order to avoid ongoing disruptive repairs as a result of the use.	**Amber**

Preferred Area No.1	Land at Former British Aerospace	This preferred area lies to the west of Hatfield and access is anticipated to be taken from the A1057 Hatfield Road. Traffic will be directed eastbound to A1001. It is noted that this site is highlighted within the Adopted Minerals Local Plan (2007) as part of the preferred area. It appears that this site could be an extension of a site locally known as Hatfield Aerodrome (planning application reference: PL/0755/16). HCC Highways recently commented on this planning application and whilst raise no objection subject to conditions a number of concerns were raised. These concerns were overcome by limiting the number of vehicle movements associated with the site. Therefore any extension is likely to raise further concerns. Other than that set out above no information has been provided to support the proposals. Further information will ultimately be required to demonstrate that the proposals are feasible. Further detailed analysis will be required to be provided within a Transport Assessment and will need to include (but not limited to): • Details of the access arrangements, it is noted that it proposed access will be taken from the A1057 Hatfield Road. Confirmation as to whether this will be via the access for application PL/0755/16 or an additional access will need to be provided. It will also need to be demonstrated that a safe and suitable access can be provided; • Determine the trip generation associated with the proposals and also the cumulative impact when considering PL/0755/16; • Determine the impact and cumulative impact on Hatfield Road/ Ellenbrook Junction and Hatfield Road/ Comet Way junction;	**Grey**

		• Details of Public Rights of Way; • Details regarding the safety of all mode users along Hatfield Road; and • A broader assessment of the collision data to take into account the proposed route for HGV movements. HCC will assess the proposal once the additional information has been submitted by the applicant.	
Preferred Area No.2	Land adjoining Rickney's Quarry	Access to the adjoining land is proposed via the existing Rickney's Quarry access from Wadesmill Road. It is acknowledged that all traffic will travel to and from the North via A602. Wadesmill Road is a numbered classified secondary distributor road with a 60mph speed limit and a 7.5 tonne weight limit. It is noted that this site is highlighted within the Adopted Minerals Local Plan (2007) as a preferred area and that the intention for this site would be an extension to the existing Rickney's Quarry. No information other than that above has been provided. At this high level HCC has no reason to object to the site. However, further information is required to assess whether the proposal is feasible. Further detailed analysis will need to accompany a planning application in the form a Transport Assessment. The additional information will need to include (but not limited to): • Details of the existing operation at Rickney's Quarry, (e.g. times of operation, size of vehicles, parking, access arrangements);	**Amber**

		• Determine the trip generation associated with the proposals and impact this will have on local junctions especially A602. It is advised that early discussions with HCC would be prudent particularly to agree mitigation if required; • A broader assessment of the collision data to take into account the proposed route for HGV movements; • The access arrangement and the suitability for increasing HGV movements in this location; • Detailed information on the impact the proposals will have on the footpaths surrounding the site and consult with the HCC Public Rights of Way Team. It should also be noted that there are additional proposals for mineral extraction for the surrounding land. Therefore, any further assessment will need to consider the cumulative impact of the proposals on the network. HCC will assess the proposal further once the additional information has been submitted by the applicant.	