Milton Keynes
Minerals Local Plan

Draft Plan Stage

August 2015

Methodology for the Assessment of Minerals-Related Development Sites

Contents

Preparation of the Minerals Local Plan

1.1. Milton Keynes Council is the Minerals Planning Authority (MPA) for the administrative area of Milton Keynes. As the MPA, Milton Keynes Council is preparing a Minerals Local Plan in line with the National Planning Policy Framework (NPPF). The scope of the Local Plan will include: the vision and objectives for minerals development within Milton Keynes; identifying a spatial strategy for minerals development; identifying the provision to be met; commitment to maintaining landbanks; safeguarding of mineral resources and related development / infrastructure; development control and management policies (including locational criteria, policies against which proposals will be determined, policies addressing potentially adverse impacts and policies to ensure restoration of sites); and identification of specific site, preferred areas and / or areas of search for minerals-related development.

1.2. In order to identify specific sites, preferred areas and / or areas of search for minerals-related development for allocation through the Local Plan it is necessary to determine how sites / areas will be identified and then assessed in order to determine which sites / areas are appropriate and can deliver the required provision of minerals through the plan period, and so should be taken forward through the plan-making process. The identification of sites / areas for allocation in the Local Plan should be based upon a robust and credible assessment of the suitability of land.

1.3. Planning authorities are required to undertake a Sustainability Appraisal (SA) – the relationship between the plan-making and SA process is summarised below in Figure 1. The SA process considers sustainability effects of implementing a land-use plan at a strategic level. In order to ascertain what potential impacts could arise as a result of minerals-related development – and subsequently which sites / areas are appropriate to include in the Local Plan in order to facilitate delivery of aggregates and contribute towards development of sustainable communities – a more focussed assessment is needed. This is where the site assessment process[1] comes in – it fills in the gap between the strategic level SA and the spatial strategy / strategic policy guidance provided through the emerging Local Plan. The site assessment process plugs into both the SA and plan-making process as it uses base elements of both of these processes (such as the plans vision, objectives and spatial strategy and the SA objectives and assessment framework). In this manner the site assessment process acts as a direct extension of the SA process and as a decision-making tool for the plan-making process. The assessments of sites for minerals related development will form part of the evidence base of the Local Plan. Figure 1 also indicates where the site assessment process plugs into both the SA and plan-making processes. The SA objectives are set out in Appendix 1.

1.4. The site assessment process is not intended to provide an exhaustive listing of decision making criteria, or to replace the development assessment process. Rather, it seeks to identify those factors that will enable meaningful comparison of site suitability, sensitivity and potential impacts.

1.5. It should be noted that in assessing preferred areas / areas of search the criteria will be applied at a landscape (broader) level as it may not be practical to assess larger general areas in the same amount of detail as individual sites.

[1] Herein the process of identifying sites / areas for minerals related development will refer to 'sites' – this should be taken to include preferred areas and / or areas of search unless otherwise stated.

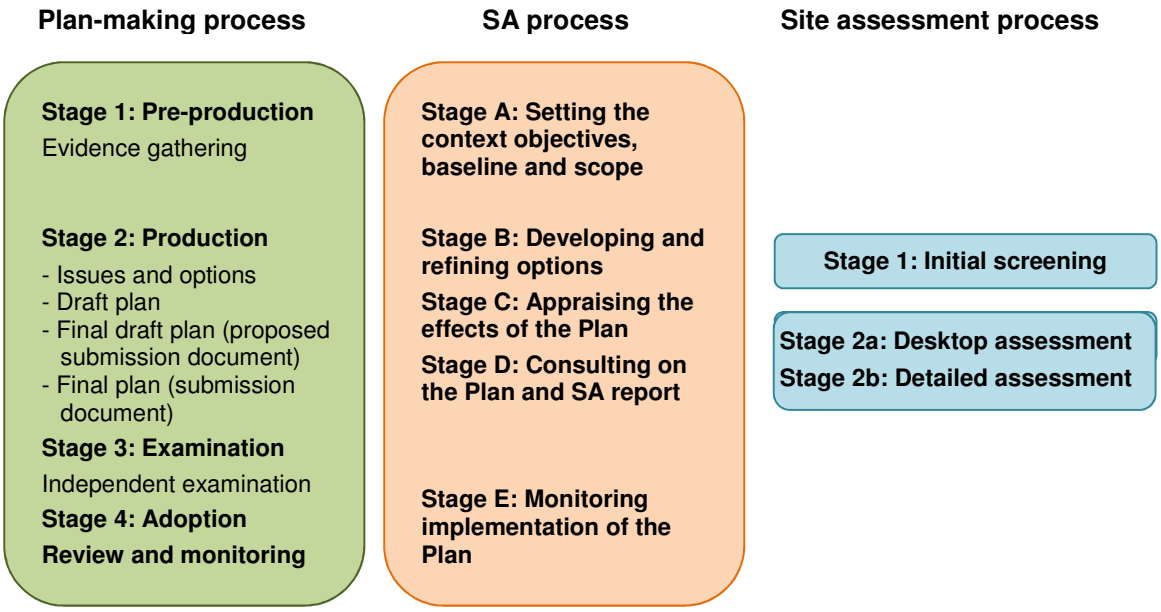

Figure 1: Relationship between the plan-making, SA and sites assessment processes

1.6. In addition the plan, and all potential allocations, may be subject to Habitats Regulations Assessment (HRA) – this is separate again from both the site assessment and SA processes.

1.7. The methodology for the assessment of sites for minerals-related development has been developed in accordance with the NPPF; it also seeks to dove-tail with the SA process in order to ensure that the decision-making process is iterative and comprehensive. The site assessment process will help to ensure consistency, maintain transparency and provide a sound basis for the allocation of sites in the Local Plan. The findings of the SA and site assessment process coupled with consultation throughout the plan-making process will assist in identifying sites to be taken forward as allocations.

1.8. Broadly, the assessment of site for minerals-related development will involve the following:

i. Identification of potential sites through the call-for-sites process, review of historic planning permissions and minerals resource datasets.
ii. Stage 1: Initial screening of the sites in order to determine consistency with the emerging plans vision and objectives and spatial strategy as well as identifying any 'red flags' that may significantly affect site suitability. The purpose of which is to inform the Issues and Options stage of the plan-making process. Following consultation on the Issues and Options document the spatial strategy may be refined this may require the sites to be screened against this to ensure they are consistent with the emerging plan.
iii. Stage 2: Desktop assessment of site / areas against the assessment criteria in order to provide an overview of features, constraints, potential impacts and capacity for avoidance and / or mitigation measures (Stage 2a). Detailed assessment of specific constraints / issues highlighted through the initial screening and desktop assessment may be further investigated where considered necessary (Stage 2b). The purpose of which is to assist in determining sites for inclusion in the Draft Plan and Final Plan documents.

Consultation

1.9. Consultation was undertaken on the draft methodology during May 2013. This involved the Councils planning and transport service, surrounding MPA's, Aggregate Working Parties, Government Agencies (Environment Agency, Natural England and English Heritage) and the minerals industry. The purpose of this consultation was to ensure that the proposed

methodology has an appropriate scope, utilises appropriate techniques, that the information used is the most up-to-date, takes consideration of local circumstance and is in line with Government guidance. Responses received indicated that the overall methodology was supported however several suggestions were put forward for amendment. These focussed on: further breaking down the assessment stages to better fit the plan-making process; refining specific processes and techniques of assessment (or suggestions for including additional assessments); and amendment of wording to better reflect national guidance. A summary of responses, Councils comments and amendments is available on the Councils website.

Identification of potential sites

1.10. Potential sites will be identified by:

- Undertake a 'call-for-sites' allowing landowners, industry and other stakeholders to state their interest in developing a specific site for minerals-related development during the plan period.
- Review of historic planning permissions to determine whether any previous proposals put forward by industry (that were not granted) may present a potential site allocation.
- Where it is considered necessary to identify broad areas of search these will be identified through the review of minerals resource datasets involving: identification of the mineral resource areas (as per BGS mapping / linework); removal of currently / previously worked areas from the mineral resource areas, national and international environmental designations and urban settlements (including a separation buffer of 250 metres around urban settlements) from the mineral resource areas; and review of local mineral resource reports to determine which areas present viable options. This process, if determined to be necessary through the Issues and Options consultation, will be documented alongside the Draft Plan consultation document.

1.11. All sites / areas identified will be subject to the site assessment process.

Stage 1: Initial screening

1.12. Stage 1 will involve screening the sites against the plans vision and objectives and the spatial strategy as well as key industry specific and major land use constraints for the purpose of identifying any red-flags that may significantly affect site suitability.

1.13. As the Local Plan is to form one document which sets out the spatial strategy, policies and allocations for minerals-related development the site assessment process, and criteria, needs to reflect the hierarchy of the plans provisions. This will help to ensure that we don't put the cart before the horse, i.e. that the allocation of sites does not lead the formation of the spatial strategy. As such following the Issues and Options stage a second round of screening may need to be undertaken, against the spatial strategy which will have been refined following consultation, to ensure that the sites are consistent with the emerging plan.

1.14. The screening criteria will include:

- Key policy considerations: the plans vision and objectives, the spatial strategy, and an assessment of deliverability.
- Consideration of other land use plans (i.e. the Milton Keynes Core Strategy and the Waste Development Plan Document).
- Industry specific considerations.
- Major land-use constraints (e.g. national and international designations on-site).

1.15. The key policy considerations will act as the first 'sieve' – sites that are not in general conformity with these may not be subject to further assessment (as they would be unlikely to support delivery of the plan).

1.16. Table 1 outlines the screening criteria to be applied during Stage 1.

Table 1: Initial screening criteria

Key policy considerations	
The plans vision and objectives	Does the site support the plans vision and objectives?
Spatial strategy	Is the site in general conformity with the spatial strategy for minerals-related development? **May require updating following consultation and refinement of the spatial strategy through the plan-making process.*
Deliverability	Is the site currently owned by the minerals operator or is there an agreement in place / being negotiated? Is the reserve quality / yield sufficient to suggest extraction would be economically viable during the plan period?
Consideration of other land use plans - Milton Keynes Core Strategy Milton Keynes Waste DPD	Is the site in general conformity with the plans vision and objectives and relevant policies (including allocations)?
Industry specific considerations	
Mineral type	What is the type of mineral proposed to be worked i.e. primary aggregate (sand and gravel, limestone) or secondary and recycled aggregates?
Contribution towards adequate supply of aggregates	What are the estimated total yield / saleable aggregate, annual extraction rate and estimated operational life? What is the intended timeframe for working the site (i.e. short term 0-5 years, medium term 5-10 years or long term 10+ years)?
Quality of reserve	What are the reserve quality / characteristics?
Geological evidence to support the reserve	Local / site specific bore hole / drilling surveys Reserve / overburden ratio Indicative resource identified through BGS mineral information mapping / reports
Intended end use and market area	Given the quality of the reserve what is the intended end use? Where is the site located – would the aggregate be likely to be used within Milton Keynes or exported?
Major land use constraints	
National and international designations	Is the site or land directly adjacent designated for national or international interests / features?
Protected species	Have any protected species been identified on-site (and recorded in existing official databases)?

1.17. Assessments will be recorded using a standard template to identify compliance with the screening criterion, this will be determined as: fully compliant / no constraints identified (green flag), generally in compliance (yellow flag), and not compliant / constraints identified (red flag).

1.18. A summary will be included in the Issues and Options consultation paper with the full screening process set out in an Annex. This information will help to inform the Issues and Options stage of the plan-making process.

1.19. Consultation responses from the Issues and Options stage (including the sites), development of the key policy considerations and the SA (and HRA where required) will be taken into consideration alongside results of the site assessments in determining which sites will be taken forward through the plan-making process. Only those sites taken forward will be subject to Stage 2 of the site assessment process. Reasons for rejection of sites (from further consideration in the plan-making process) will be documented.

Stage 2: Detailed assessment

Desktop assessment

1.20. Stage 2 will involve assessment of the sites against environmental, social and economic criterion (based on the SA objectives, refer Table 2) in order to provide an overview of the features and constraints present that may affect site suitability (Stage 2a) and so inform identification of the preferred site for inclusion in the Draft Plan document. It should be noted that the assessment criteria will be further refined in line with development of the SA framework.

1.21. In general this stage may involve: broad identification of assets/features, including their context/significance, potentially affected (using officer knowledge, available records, GIS, etc); identification of potentially adverse impacts that may impact on the asset/feature (this may be addressed in assessment records through other criterion); identification of site specific avoidance and / or mitigation measures that may be required to reduce potentially adverse impacts to an acceptable level; identification of opportunities for enhancement and other beneficial outcomes; and identification of potential cumulative impacts. It should be understood that the assessment takes account of a wide array of assets/features and potential impacts - information collated for different criterion is not viewed in isolation, rather the assessment is taken as a whole with criterion informing the overall context of the assessment.

1.22. A general field visit will also be undertaken to view the site in context of its surrounds, during which photos may be taken from various vantage points for council records, however specific assessments/surveys will not be undertaken at this stage. The purpose of the field visit is for general familiarisation and to provide context.

1.23. Where appropriate (and in line with a proportionate evidence base) published sector specific guidance on undertaking assessment of potential impacts (e.g. on flood risk, heritage assets, biodiversity/habitat, etc) will be incorporated into the process however it is not necessary to detail the methodology for each criterion listed below in Table 2.

Table 2: Detailed desktop assessment criteria

Environmental, social and economic assessment criterion	Link to SA objective
Air quality (including dust)	SA1 Maintain and improve air quality (including noise and dust)
Protection of water resources (including groundwater)	SA2 Maintain and improve water resources and reduce flood risk
Flood risk	SA2
Agricultural land and soil quality	SA6 Conserve natural resources (including soil resources) and encourage the use of secondary and recycled aggregates
Noise and vibration	SA1

Environmental, social and economic assessment criterion	Link to SA objective
	SA9 Protect human health and minimise potentially adverse impacts on residential amenity
Nature conservation, biodiversity and geodiversity	SA3 Conserve and enhance biodiversity and geodiversity
Historic environment and heritage assets	SA4 Conserve and enhance the historic environment, heritage assets and their setting
Landscape character	SA5 Promote the distinctiveness and character of landscapes and townscapes
Built environment and townscape	SA5
Opportunities for beneficial restoration and after use	SA7 Promote progressive restoration that maximises beneficial outcomes and after-use
Climate change and opportunities for sustainable development	SA6 SA8 Address climate change and reduce the potential for greenhouse gases (including by promoting opportunities for sustainable development and sustainable / alternative transport options)
Proximity to sensitive receptors	SA9
Compatibility of surrounding land-uses	SA9
Impact on general amenity or character of the area (including the potential for residual environmental nuisance)	SA1 SA9
Impact on recreational opportunities and open spaces (including rights of way)	SA10 Improve access to green infrastructure, recreation facilities and opportunities
Economic and employment opportunities	SA11 Ensure a steady and adequate supply of minerals to support sustainable economic growth SA12 Support employment opportunities in urban and rural areas SA13 Safeguard mineral resources of local and national importance for future generations
Availability of and impact on infrastructure	SA14 Safeguard committed minerals-related development and associated infrastructure from incompatible forms of development SA15 Maximise efficient use of existing infrastructure and transport networks
Site access and impact on transport network / infrastructure (nature and capacity of existing network / type and level of traffic resulting from development / conflicts with non-industrial transport / opportunities for alternative and sustainable transport options)	SA14 SA15
Capacity for avoidance and / or mitigation measures	Is there sufficient capacity for (standard) avoidance and / or mitigation measures to reduce potential impacts to an acceptable level?
Potential for cumulative impacts	Is there potential for beneficial or adverse cumulative impacts either alone or in-combination with other plans / projects?

1.24. No weightings will be applied to the criterion as this implies that different indicators are directly comparable, allowing for 'scores' to be allocated and added together resulting in a sum total that would determine the best option. The constraints and issues presented by individual sites are complex in nature and require consideration on a site-by-site basis.

1.25. Site assessments will be largely reliant on existing data and information. The assessments will be undertaken by personnel specifically identified to conduct assessments based on their respective professional fields. All assessments will be subject to quality assurance checks via peer review and fact checks; this will help to ensure a comprehensive and objective assessment. The following references will form the main background information sources and assist in establishing the known built and natural environmental character context, as well as providing an objective framework to support the assessment:

- Relevant environmental, infrastructure and land use GIS datasets,
- Core Strategy and Waste DPD's,
- Minerals Local Plan 2006,
- Mineral resource information reports, maps and surveys,
- Current and historic planning permissions, and
- Environmental and landscape character assessments, green infrastructure strategy / studies, Biodiversity Action Plan, Historic Environment Record (Sites and monuments record), Local Transport Plan, etc.

1.26. Where potentially adverse impacts are identified an indicative risk assessment will be provided in order to identify the scale and nature of the impact and allow for comparison of sites (refer Table 3 and 4).

1.27. The information obtained from the Stage 2 assessments will assist in determining sites for inclusion in the Draft Plan.

1.28. Assessments will be recorded using a standard template to identify site specific factors, indicative risk of potential effects, identification of standard avoidance and / or mitigation measures that may be required, potential for cumulative impacts and an overall evaluation of the sites suitability.

1.29. A summary of the assessments will be included in the Draft Plan consultation paper with the full assessments contained in an Annex.

1.30. Consultations responses from the Draft Plan stage (including the sites), development of the key policy considerations and the SA (and HRA where required) will be taken into consideration alongside results of the site assessments in determining which sites will be taken forward through the plan-making process to the Final Plan stage. Reasons for rejection of sites (from further consideration in the plan-making process) will be documented.

Table 3: Scale of impact

Scale	Definition
Negligible	So small or unimportant that it may safely be neglected or disregarded.
Minor	Beneficial impact resulting in slight increase in quality or character enhancement.
	Slight adverse impact highly likely to be ameliorated by mitigation measures with remaining residual impacts being negligible (or within acceptable limits. Identified constraints are acceptable.
Moderate	Beneficial impact resulting in an increase in quality or character enhancement.
	Adverse impact resulting in harm. It is possible that implementation of avoidance and/or mitigation measures will reduce impacts to an acceptable level. Identified constraints are significant.
Major	Beneficial impact resulting in extensive and significant increase in quality or character enhancement.
	Adverse impact resulting in significant harm. The implementation of avoidance and/or mitigation measures is unlikely to reduce impacts to an acceptable level. Identified constraints are unlikely to be overcome.

Note: Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered at the 'national' level for the purpose of the impact risk rating (NPPF para 139).

Detailed assessment of specific constraints / issues

Following consultation on the preferred sites (set out in the Draft Plan), detailed investigation of specific constraints / issues will be undertaken where considered necessary (Stage 2b) alongside the preparation of the Final Plan document. The need for further assessment will be determined by the previous assessment stages and consultation responses and will be identified in an Annex accompanying the Draft Plan. Table 4: Impact risk rating

	Scale of impact				
Level of impact	**Negligible**	**Minor**	**Moderate**	**Major**	
National	Negligible	Moderate	High	Very high	Adverse
County or sub-regional	Negligible	Low	Moderate	High	
Local	Negligible	Low	Low	Moderate	
Local	Negligible	Low	Low	Moderate	Beneficial
County or sub-regional	Negligible	Low	Moderate	High	
National	Negligible	Moderate	High	Very high	

Table 5: Examples of detailed assessment

Constraint / issue	Examples of assessment techniques
Environmental impacts / nuisance, amenity, flood risk and land use conflict	Risk assessment, sensitivity analysis and source-pathway-receptor analysis
Ground truthing *(Does not include seasonal surveys, sampling, or intrusive evaluation (e.g. trial pits) such as undertaken for purpose of an EIA).*	Biodiversity, historic environment, landscape character, infrastructure and transport
Contribution towards delivering the plans objectives and operational requirements	Compliance with emerging policy, consideration of industry requirements and land use assessment
Cumulative impacts	Consideration of impacts alone and in-combination with other plans and / or projects and risk assessment

1.31. Following consultation on the preferred sites, detailed assessment will be undertaken where necessary. The need for further assessment will be determined by the previous assessment stages and consultation responses.

1.32. Examples of constraints / issues that may be identified and broad assessment measures to be applied are outlined in Table 5, with techniques to be used for detailed assessments determined to be required set out in Appendix 2.

1.33. Techniques to be applied include GIS analysis, professional judgement, risk-based assessment, sensitivity analysis and field surveys (ground-truthing).

1.34. The information obtained from the Stage 2b detailed assessments will ultimately support the allocation of sites throughout the plan-making process.

1.35. Assessments will be recorded using a standard template with a summary included in the Final Plan consultation paper with the full assessments contained in an Annex.

Appendix 1: SA objectives

The draft SA objectives are set out below.

1 Maintain and improve air quality (including noise and dust)

2 Maintain and improve water resources and reduce flood risk

3 Conserve and enhance biodiversity and geodiversity

4 Conserve and enhance the historic environment, heritage assets and their setting

5 Promote the distinctiveness and character of landscapes and townscapes

6 Conserve natural resources (including soil resources) and encourage the use of secondary and recycled aggregates

7 Promote progressive restoration that maximises beneficial outcomes and after-use

8 Address climate change and reduce the potential for greenhouse gases (including by promoting opportunities for sustainable development and sustainable / alternative transport options)

9 Protect human health and minimise potentially adverse impacts on residential amenity

10 Improve access to green infrastructure, recreation facilities and opportunities

11 Ensure a steady and adequate supply of minerals to support sustainable economic growth

12 Support employment opportunities in urban and rural areas

13 Safeguard mineral resources of local and national importance for future generations

14 Safeguard committed minerals-related development and associated infrastructure from incompatible forms of development

15 Maximise efficient use of existing infrastructure and transport networks

Appendix 2: Detailed assessment techniques

Detailed assessment requirements determined following Stage 2a of the assessment process and identification of the preferred are set out in the table below. Where potential adverse impacts affect more than one assessment criterion the detailed assessment will be combined to ensure an efficient process and reduce unnecessary duplication.

Assessment undertaken on the Calverton Road, Calverton/Passenham and Weston Underwood sites did not identify the need for further detailed assessment.

Site	Assessment criterion identified as requiring detailed assessment	Previous assessment determined a need to investigate ...	Technique to be applied
Quarry Hall Farm	Nature conservation, biodiversity and geodiversity	Protected species have been recorded on site (Bewick Swan and Hobby). A number of notable species have also been recorded on the site (include hedge sparrow, Snipe, ground-nesting Wheatear and Lapwingas). Potential impacts on the undesignated open water and wetland habitat within approximately 40m of the site which forms part of a wildlife corridor associated with the River Ouse	Nature conservation assessment
Northampton Road, Lathbury	Landscape character	Capacity of the landscape to accommodate the proposed development and potential for mitigation given that the site is located within a stretch of the river that is relatively undisturbed containing a number of floodplain meadows along its course and represents the strongest unifying factor and core of the Ouse Valley	Landscape capacity and visual sensitivity assessment
	Built environment and townscape	Potential levels of visual intrusion, capacity of the site to accommodate the proposed development and potential for mitigation	
	Proximity to sensitive receptors Compatibility of surrounding land-uses Impact on general amenity or character of the area	Risk of unacceptable residual environmental nuisance impacts including noise and dust (visual impacts captured by above assessments)	Risk assessment and sensitivity analysis
Manor farm and Lavendon Mill	Landscape character	Capacity of the landscape to accommodate the proposed development and potential for mitigation given that the site is located within a stretch of the	Landscape capacity assessment

		river that is relatively undisturbed containing a number of floodplain meadows along its course and represents the strongest unifying factor and core of the Ouse Valley	

Nature conservation assessment

Stage 2a of the site assessment methodology involved a desktop based assessment involving the use of GIS, local habitat mapping, aerial photographs, historic records and local knowledge. The purpose of the review was to outline the habitat type(s) present and their relative importance.

The detailed assessment (Stage 2b) will involve ground-truthing (i.e. site visits) with the aim to map all major habitat types (quality and size) and record species (and their abundance) from each habitat patch. The quality of the habitat will be related to species richness and abundance, and assessed on a continuous scale. Botanical and other species groups will be recorded where present and identified. A species list will be created separately for each habitat patch (recorded on a DAFOR scale, Table 16). The DAFOR scale is a quantitative definition of the typical abundance and frequency of habitats (see below table).

DAFOR scale

Class	Typical abundance and frequency
Dominant (D)	The dominant vegetation / species highly visible, more than 75% cover
Abundant (A)	Many individuals or patches visible, 51-75% cover
Frequent (F)	Several individuals or few patches, 26-50% cover
Occasional (O)	A small patch or a few individuals, 11-25% cover
Rare (R)	Single very small patch or individual, 1-10% cover

Habitat boundary mapping will also be undertaken to map the site into its constituent habitats, this was done primarily by eye (and GPS where necessary). Due to the potential complexity of habitat structure and composition (e.g. some sites may present a mosaic of very small, interlinked patches – the resource requirements for which are beyond the purpose and boundary of this assessment) a threshold based on habitat size will be applied (see table below) in order to guide the level of mapping detail required for individual sites and habitats.

Habitat size threshold for habitat boundary mapping

Habitat type	Area (ha)	Length (m)
Woodland (all types)	0.5	-
Scrub	0.1	-
Hedge	-	30
Grassland (all coarse types – neutral, calcareous, acidic)	0.05	-
Heathland	0.05	-
Swamp (and all related habitats)	0.05	-
Water course (e.g. ditch / spring)	-	20

Note: Habitat patches below the threshold size are not individually mapped, but should be recorded or target-noted.

Interesting individual features will not be individually mapped, but will be summarised and noted. The presence of habitats or features potentially supporting protected species or habitats will also be identified (and where relevant, marked on a map as appropriate).

The potential for priority habitat creation through restoration of site allocations will also be investigated in conjunction with the field surveys, including consideration of adjoining land where possible. Where this is not possible (access restrictions) or not necessary (a visual assessment from the site was sufficient in some instances) other information sources (e.g. GIS, local habitat mapping, aerial photographs, historic records and local knowledge) will be utilised to determine the major habitat types present on adjacent land. Assessment of the broader landscape and wildlife corridors will be undertaken using secondary information sources as indicated above. The information obtained from the site assessments and other information sources will be applied to determine the potential of the site to contribute towards restoration or creation of new priority habitats.

An example template of the site assessment and survey sheet (Stage 2b) is provided below.

Site assessment and survey sheet (Stage 2b) template

Site reference	
Rapid assessment	
Major habitat type(s) present and relative importance	
Site based habitat and species survey	
Date of survey	
Botanical survey	
Dominant species listing & DAFOR	
Other species groups present	
Species listing & DAFOR	
Major habitat types identified	
Habitat type:	**Quality:**
	Size (area / length):
	Species present within habitat patch & DAFOR:
Habitat type:	**Quality:**
	Size (area / length):
	Species present within habitat patch & DAFOR:
Habitat boundary mapping	
(Insert / sketch habitat boundary map, or alternatively attach a separate map to the survey form)	
Potential for priority habitat creation through restoration	
Major habitat type(s) present (and relative importance*)* on adjoining land *(indicate whether field survey was possible / necessary and any other information sources used.)*	
Does the site (or adjacent land) currently form part of a wildlife corridor?	
Does the site present future potential to contribute towards the restoration or creation of new priority habitats? *(Specify opportunities for restoration or creation of new priority habitats e.g. habitat types. This may include extension of habitat creation onto adjacent land.)*	

Landscape capacity and visual sensitivity

The objective of the landscape capacity and visual sensitivity assessment is to carry out an appraisal of likely landscape capacity for individual sites i.e. the extent to which a site can accommodate the proposed development.

In order to obtain all the data required and to carry out an assessment of the capacity for an individual site to accommodate the proposed development, both desk and field work are to be undertaken. All work will be carried out in accordance with best practice guidance as set out in the following publications:

- The Landscape Institute (2013) Guidelines for Landscape & Visual Impact Assessment 3rd edition;
- Scottish Natural Heritage and The Countryside Agency (2002) Landscape Character Assessment; and
- Scottish Natural Heritage and The Countryside Agency (2002) Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity.

The methodology is based on the criteria for judging landscape capacity to accommodate a specific type of change as given in Topic Paper 6. This states that landscape capacity to accommodate a specific type of change should reflect landscape character sensitivity, landscape value and visual sensitivity. The Topic Paper is not a definitive method of assessment but rather an aid in setting out some of the key principles, to encourage greater transparency in the thinking applied and to promote consistency in such work. For this reason, set out below is the methodology employed for each of the key stages of the study and in particular, the basis upon which key judgements have been made regarding the sensitivity of the landscape to change and its potential to accommodate the development.

Parameters for different forms of minerals extraction are given in the table below. This information was used to help with the landscape and visual appraisals by setting some basic parameters against which to judge capacity of the landscape to accommodate the proposed development.

Parameters of different types of mineral extraction

Proposed Use	Parameters of proposed use
Sand & Gravel Quarries (Small)	• Fixed processing plant up to 10m high • Peripheral temporary soil storage/visual attenuation bunds to 3m • Temporary overburden stockpiles to 8m • Excavation depth below ground level up to 5m • Lorry movements 150 a day • Processed mineral stockpiles to 8m high • Height of proposal 10m
Sand & Gravel Quarries (Large)	• Fixed processing plant up to 18m high • Peripheral temporary soil storage/visual attenuation bunds to 3m • Temporary overburden stockpiles to 8m • Excavation depth below ground level up to 5m • Lorry movement 350 per day • Processed mineral stockpiles 8m high • Height of proposal 18m
Borrow Pit	• Mobile processing plant up to 5m • Excavation depth below ground level up to 5m • Height of proposal 5m
Stone Quarries	• Processed mineral stockpiles 8m high • Peripheral temporary soil storage/visual attenuation bunds to 3m • Temporary stockpiles 8m high

	• Excavation depth below ground level 10m • Lorry movements 150 per day • Mobile processing plant up to 5m high • Height of proposal 5m

Desk study

The following landscape character assessments and studies act as key references:

- The Countryside Agency (1999) *Countryside Character Volume 7: South East & London (http://www.naturalengland.org.uk/Images/SEcharacter_tcm6-5088.pdf).*
- Milton Keynes Council (2007) *Draft Landscape Character Assessment (LCA) (http://www.milton-keynes.gov.uk/planning-and-building/planning-policy/draft-landscape-character-assessment).*[2]

Site boundaries and information on potential environmental constraints was gathered though Stage 2a of the site assessments. This included public rights of way, environmental and cultural designations. As a result it will be possible to appraise in the field which designations would potentially be affected by the proposed development.

The study areas were defined through a combination of desk study i.e. analysis of landform and a visual assessment in the field examining the extent of visibility from publicly accessible areas. The extent of visibility is closely related to topography, as it is generally hills and ridgelines which contain views and act as visual watersheds.

Site visits

Site visits will be undertaken to confirm and amend where necessary, the results of the desk study and provide additional landscape character and contextual information. In addition, the visibility of receptors will be checked and visual assessments of the sites are to be undertaken from publicly accessible locations. The results will be recorded on survey forms.

Analysis and presentation of results

The analysis will draw upon the information gathered during the desk study and field survey work. The different aspects of landscape character sensitivity, visual sensitivity and landscape value will be judged on a five point scale for each site i.e. high, medium to high, medium, low to medium or low. These will be used to assess the site landscape capacity for accommodating the proposed development with and without potential mitigation and also judged using a five point scale.

Judgements on the effects of proposed development and mitigation will not be based upon the specific design of each proposal as this will be considered as part of the planning process. If the development on a particular site varies significantly from the parameters outlined above or the development and mitigation is designed poorly without adequate reference to landscape character and views, the capacity of a site is likely to be lower than what is assessed. Therefore proper design and integration is essential to each proposal.

Mitigation

Potential mitigation opportunities will be assessed with the aim of conserving and enhancing landscape character in accordance with the LCA and Green Infrastructure studies. Site design should allow space for mitigation screening and gains to maximise biodiversity benefits,

[2] The draft 2007 LCA is currently under review and it is expected the updated assessment will be available for consultation in mid 2015. In light of this, until a final LCA is published, the site assessments will be informed by the draft 2007 LCA.

minimise views from public rights of way, sensitive receptors and important environmental features.

Landscape capacity

Capacity is likely to vary according to the type and nature of change being proposed. Reaching conclusions about capacity means making a judgement about whether the amount of change proposed can be accommodated without having unacceptable adverse effects on the character of the landscape (related to landscape character sensitivity), or the way that it is perceived (related to visual sensitivity) and without compromising the values attached to it (related to landscape value).

Landscape character sensitivity

Landscape sensitivity can be defined as the extent to which a landscape type or area can accept change of a particular type and scale without unacceptable adverse effects on its character. It is based on judgements about the sensitivity of aspects most likely to be affected:

- Natural factors - extent and pattern of semi-natural habitat.
- Cultural factors - land use, enclosure pattern, settlement pattern, field boundaries.
- Landscape condition - representation of typical character, intactness.
- Aesthetic factors - scale, enclosure, pattern, form / line, movement.

Landscape Character Sensitivity Ratings

Landscape Character Sensitivity	Definition
Low	• A landscape or landscape features of low sensitivity potentially tolerant of substantial change e.g. developed or derelict landscape setting where new development could be accommodated without adversely effecting character.
Medium	• A landscape or landscape features of moderate sensitivity reasonably tolerant of change.
High	• A landscape or landscape feature of particularly distinctive character susceptible to relatively small change e.g. rural landscape with few uncharacteristic and detracting man-made features where new development could not be accommodated without adversely effecting character.

Landscape value

Landscape value is concerned with the relative value that is attached to different landscapes. In a policy context the usual basis for recognising certain highly valued landscapes is through the application of a local or national designation. Yet a landscape may be valued by different communities of interest for many different reasons without formal designation. Recognising, for example, perceptual aspects such as scenic beauty, tranquillity or wildness, special cultural associations, the influence and presence of other conservation interests, or the existence of a consensus about importance, either nationally or locally. In the context of this study a professional judgement has been made on the value of the landscape within the setting of a site, giving consideration to, for example, sites or areas designated for their landscape value.

Designations which are most relevant to this study are those which are related to protection of landscape or buildings partially or wholly for their contribution to the landscape. Within Milton Keynes national and local landscapes designations or features include:

- National: none;

- Local: local landscape designations (Policy S11 from the MK Local Plan 2005 identifies areas of attractive landscape and includes the Ouse valley (north of Wolverton) and the Brickhills), Registered Parks and Gardens, Conservation Area and Listed Building; and
- Other designations which are important components of the landscape and contribute towards landscape value, but which are not protected for their contribution to the landscape, include nature conservation sites and Scheduled Ancient Monuments.

Part of the judgement of landscape value lies in the views of communities of interest, although obtaining these views is not part of this study. In all cases landscape value is evaluated as medium unless there is an obvious reason to give a higher or lower value (e.g. elevate because of a landscape designation, or lower because of a high degree of disturbance and degradation).

Landscape value rating

Landscape value	Definition
Low	• No relevant designations. Degraded or possibly derelict landscape.
Low to medium	• Between low and medium
Medium	• All landscapes unless there is an obvious reason to give a higher or lower value. • The zone lies within, or within the setting of, a relevant local designation but it is not considered that development would adversely affect it.
Medium to high	• The zone lies within, or within the setting of, a relevant local designation and it is considered that development would adversely affect it
High	• The zone lies within, or within the setting of, a relevant national designation (e.g. AONB)

Visual sensitivity

Visual sensitivity is based on the nature of change proposed and its interaction with visual aspects of the landscape, for example:

- The nature of proposed change - considering factors such as height, massing, colour, movement and how it would blend in with or contrast with other elements in its setting;
- General visibility of the proposed development - considering influences of enclosing or screening elements such as landform, hedgerows, trees, woodlands and built development; and
- Population - numbers and types of viewers. The sensitivity of visual receptors (or viewers) is dependent on the location and context of the viewpoint and viewing opportunities, the occupation / pastime of the receptor and the importance of the view. The sensitivity of viewers can be expressed as:
    - Low - Viewers with a passing interest in their surroundings, e.g. motorists, people at their places of work;
    - Medium - Viewers with a moderate interest in their surroundings, e.g. people engaged in outdoor sport or recreation; and
    - High - Viewers with proprietary interest and prolonged viewing opportunities, e.g. a residential property or users of a public rights of way. Those whose attention maybe focused on the landscape.

Visual sensitivity rating

Visual sensitivity	Definition
Low	• Nature of change proposed - unobtrusive in the context of its setting. • General visibility of the proposed development - enclosed, screened. Only visible from short distances. • Population - Seen by few viewers, or predominantly by viewers with a passing interest in their surroundings, e.g. motorists
Medium	• Nature of change proposed - moderately obtrusive in the context of its setting. • General visibility of the proposed development - visible but partially enclosed or screened. Not visible from long distances. • Population - seen by a moderate number of viewers. Seen by viewers to be of medium or lower sensitivity.
High	• Nature of change proposed - highly obtrusive in the context of its setting. • General visibility of the proposed development - highly visible due to the open, exposed nature of the surroundings. Might be visible from long distances. • Population - seen by a large number of viewers. Seen predominantly by viewers to be of high or lower sensitivity.

Risk assessment and sensitivity analysis

Risk assessment and management techniques are commonly used as decision making tools in policy making and regulation, and are useful in providing a basis for site-specific decisions. For example in the allocation of sites and land-use planning the assessment can incorporate wider issues as well as site specific impacts resulting from a particular installation / development proposal. Using defined criteria the most appropriate risk reduction measures are chosen that reduce the risk to an 'acceptable' level at an 'acceptable' cost. The precautionary principle is also an important element in risk assessment.

The method adopted considers both the likelihood and seriousness of a risk event. In addition the definitions used for the different levels have been adapted to address the specific type of risk being evaluated, e.g. pollution potential, environmental risk, receptor sensitivity, etc (see below tables). The level of risk is determined as a product of the likelihood and consequence (see below tables).

In order to undertake a robust risk assessment and sensitivity analysis the context surrounding the relevant issues should firstly be established. This includes the collection and analysis of background information regarding the site, surrounding environment (both natural and built) and the nature of the proposed development. Evidence gathered during previous stages of assessment and any new information released or brought forward as a result of consultation undertaken during the plans preparation will act to establish the context.

Secondly, the risks (including potential sources and impacts) need to be identified. Again the previous assessment and new information brought forward will be considered, however the risks are largely a product of the operations, resource requirements, outputs and ability of the environment to accommodate these.

Thirdly, an analysis of the risks is required to determine the likelihood and consequence; this includes consideration of controls currently in place (and their effectiveness) as well as the ability of the environment to deal with the risk and sensitivity of receptors. The risks are also evaluated at this stage to determine whether the nature and level of risk is acceptable or not.

Lastly, where the risk is deemed to be unacceptable the potential treatment or management measures will be considered (e.g. standard operational mitigation and control measures). Risks can be managed in many ways such as through elimination, transferral, retention or reduction (this is the most common approach to risk management in policy and regulatory decisions). Risk reduction choices are based on much wider issues than the results of the assessment alone and may include factors such as health, environment, social and economic issues as well as the perception of the risk, viable management methods, etc. The expected reduction in the level of risk resulting from implementation of the potential treatment or management measures assists in determining whether the residual risk would be considered acceptable.

The risk assessment and sensitivity analysis will be recorded using the assessment matrix detailed in the below table.

Zones for potentially significant dust effects

Description	Potential Distance for significant adverse effects (distance from source)		
	Soiling	PM_{10}*	Vegetation
Large sites with high use of haul roads	100 m	25-50 m	25 m
Moderate sized sites, with intermediate use of haul roads	50 m	15-30 m	15 m
Minor sized sites with limited use of haul roads	25 m	10-20 m	10 m

* Significance is based on the 2007 objectives contained within the Air Quality (England) Regulations (2000)[5] and later amendments[6], which allow 35 exceedences/year of 50 $\mu g/m^3$ and takes account of existing high concentrations in the area. A range has been specified, as it is difficult to assess possible PM_{10} impacts, especially in an area with high baseline concentrations.

Source: Environmental Statement for Thames Gateway Bridge 2004[7].

Likelihood definitions

Rating	Score	Criteria
Almost certain	**A**	There is a high likelihood of the risk event happening in most circumstances.
Probable	**B**	The event probably will occur in most circumstances.
Possible	**C**	Would not surprise if risk event occurred. The event should occur at some time (i.e. once in a while).
Unlikely	**D**	Could occur at some time but is unlikely.
Rare	**E**	Within the realms of possibility but extremely unlikely to occur. The event may occur only in exceptional circumstances.

Note: Descriptions are indicative only and provide a guide to relative consequences

Consequence definitions

Rating	Score	Criteria
Catastrophic	**5**	• Adverse environmental impacts resulting from operations are not able to be reduced through mitigation measures / boundary alteration / planning controls. Overall the operational impact would be negative and result in off-site impacts, loss of features and severe degradation of quality. No viable enhancement opportunities (such as restoration or creation of new priority habitats) are presented by the proposal. • Severe (irreversible) environmental damage. • Highly sensitive receptors adjacent or within 250m of the site. • Incompatible land use adjacent or within 250m of the site, conflict resolution measures (e.g. negotiations and mitigation) are not viable.
Major	**4**	• Some adverse environmental impacts resulting from operations are able to be reduced through mitigation measures / boundary alteration / planning controls, however others may result in off-site impacts, loss of features and degradation of quality, further investigation would be required to determine the nature and extent of potential impacts and effectiveness of mitigation measures. Enhancement opportunities

Rating	Score	Criteria
		(such as restoration or creation of new priority habitats) presented by the proposal may not be feasible or do not balance out adverse impacts. • Critical event, which with proper management, will be endured however is likely to result in medium to long term (reversible) environmental damage. • Highly sensitive receptors within 250 - 500m of the site. • Incompatible land use within 250 - 500m of the site, conflict resolution measures (e.g. negotiations and mitigation) are able to reduce conflict however residual off-site impacts may remain.
Moderate	**3**	• Adverse environmental impacts resulting from operations are able to be reduced through mitigation measures / boundary alteration / planning controls. However there may be residual environmental nuisance impacts for more sensitive receptors which may require further investigation. Enhancement opportunities (such as restoration or creation of new priority habitats) presented by the proposal are feasible but overall beneficial outcome would be limited. • Significant event, which can be managed under normal procedures resulting in short to medium (reversible) environmental damage. • Receptors with a medium to high level of sensitivity within 500m – 1km of the site. High: hospitals and clinics, retirement homes, hi-tech industry, painting and furnishings and food processing. • Incompatible land use within 500m – 1km of the site, conflict resolution measures (e.g. negotiations and mitigation) are able to reduce conflict to acceptable levels.
Minor	**2**	• Adverse environmental impacts resulting from operations can be reduced to acceptable levels relatively straightforward through mitigation measures / boundary alteration / planning controls. The overall impact is likely to be neutral as enhancement opportunities (such as restoration or creation of new priority habitats) presented by the proposal are viable and result in beneficial outcomes. • Consequences can be readily absorbed but management effort is still required to minimize impacts. • Receptors with a low to medium level of sensitivity within 1 - 2km of the site. Low: farms, industry and outdoor storage. Medium: schools, residential areas, food retailers, glasshouses and nurseries, horticultural land and offices. • Land uses are broadly compatible; conflict resolution measures (e.g. negotiations and mitigation) are able to reduce conflict to acceptable levels.
Negligible	**1**	• There is limited potential for adverse environmental impacts resulting from operations (those that exist are relatively straightforward to address). Enhancement opportunities (such as restoration or creation of new priority habitats) presented by the proposal are viable and will result in beneficial outcomes. • Insignificant impact. • Sensitive receptors greater than 2km from the site. • Land uses are compatible.

Note: Descriptions are indicative only and provide a guide to relative consequences.

Risk assessment matrix

	Consequences				
Likelihood	**1 (Negligible)**	**2 (Minor)**	**3 (Moderate)**	**4 (Major)**	**5 (Catastrophic)**
A (Almost Certain)	Moderate	Moderate	High	Very High	Extreme
B (Probable)	Low	Moderate	Moderate	High	Very High
C (Possible)	Negligible	Low	Moderate	Moderate	High
D (Unlikely)	Negligible	Low	Low	Moderate	Moderate
E (Rare)	Negligible	Negligible	Negligible	Low	Moderate

Risk assessment matrix

Assessment criteria	Risk identification	Risk value (no management)	Management measures	Risk value (with management)	Residual risk
Economic					
Environmental					
Social					
Spatial - Access and transport					
Spatial - Land use and infrastructure					
Operational – Minerals / Waste					