

# **Green Hill Solar Farm**

## **EN010170**

### **Environmental Statement**

### **Chapter 11: Minerals**

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## Issue Sheet

Report Prepared for: Green Hill Solar Farm

DCO Submission

### Chapter 11: Minerals

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## 11 Minerals

### 11.1 Introduction

- 11.1.1 This chapter presents the findings of the Environmental Impact Assessment (EIA) concerning the potential mineral resource impacts of the Scheme during the construction, operation and maintenance, and decommissioning phases.
- 11.1.2 The following aspects will be considered within the minerals assessment process:
- The baseline geology, relying on proven geology and published information;
  - National and local minerals planning policies;
  - Potential impacts on identified mineral resources and permitted workings; and
  - Potential impacts arising from the full extent of the Scheme plus a 500m buffer surrounding the Scheme.
- 11.1.3 For project description details, please refer to Chapter 4: Scheme Description [EN010170/APP/GH6.2.4] of this Environmental Statement (ES).
- 11.1.4 This chapter has been prepared by Clover Planning (see Statement of Competence [EN010170/APP/GH6.3.1.1]).

#### Appendices and Figures

- 11.1.5 This chapter is supported by the following appendices:
- **Appendix 11.1 Earls Barton Mineral Planning Permissions**
- 11.1.6 This chapter is supported by the following standalone figures:
- **Figure 11.1 Mineral Resource Plans Green Hill A and A.2 Sheet 1 of 5;**
  - **Figure 11.2 Mineral Resource Plans Green Hill B Sheet 2 of 5;**
  - **Figure 11.3 Mineral Resource Plans Green Hill C, D and E Sheet 3 of 5;**
  - **Figure 11.4 Mineral Resource Plans Green Hill F and BESS Sheet 4 of 5; and**
  - **Figure 11.5 Mineral Resource Plans Green Hill G Sheet 5 of 5.**
- 11.1.7 This chapter is supported by the following tables:
- **Table 11.1: Relevant Scoping Opinion Comments;**
  - **Table 11.2: Statutory Consultation Comments;**
  - **Table 11.3: Criteria for Assessing Sensitivity of Receptors;**
  - **Table 11.4: Criteria for Assessing Magnitude of Impacts (positive or negative);**
  - **Table 11.5: Criteria for Assessing the Significance of Effects; and**
  - **Table 11.6: Summary of Residual Effects for Minerals.**



## 11.2 Consultation

11.2.1 An EIA Scoping Report was submitted to the Planning Inspectorate (PINS) in July 2024 (Ref 11.2) with a formal request for a Scoping Opinion. PINS subsequently issued the Scoping Opinion on 30 August 2024.

**Table 11.1: Relevant Scoping Opinion Comments**

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
The Planning Inspectorate 30 August 2024 ID 3.2.1	Section 11.4 The terms used in para 11.4.9 to describe the impact magnitude values differ to those set out in Table 11.2: 'Criteria for Assessing Magnitude of Impacts' (the heading of which incorrectly refers to sensitivity rather than magnitude). In addition, the impact magnitude terms used to determine the level of significance as set out in Table 11.3 differ again. As a result, the methodology proposed to be applied to the assessment is unclear.  This should be clarified in the ES	These sections have been reviewed and amended so that the identified terms are used consistently throughout this chapter. These amendments are reflected in the ES.	Section 11.4.
The Planning Inspectorate 30 August 2024 ID 3.2.1	Section 11.4 The Inspectorate notes that parts of the site lie within or in close	Meetings have been held with West Northamptonshire Council (3rd	The outcome of those meetings is reported in Section 11.8



Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	proximity to Minerals Safeguarding Areas and Minerals Consultation Areas. The ES should demonstrate that the relevant Minerals Planning Authorities have been consulted in respect of the proposals and that the Proposed Development does not impact on future ambitions for minerals extraction within the region.	October 2024) and North Northamptonshire Council (7th October 2024) to discuss these issues. A meeting was sought with Milton Keynes Council in their role as the Minerals Planning Authority however they did not respond.	
Natural England 20 August 2024	Consider that the guidance provided for minerals and waste development in relating to soil handling, storage and placement and final site restoration is taken into account in the ES.	Consideration to minerals and waste primarily relating to soil handling is addressed in Chapter 20: Agricultural Circumstances	This is addressed in Chapter 20: Agricultural Circumstances [EN010170/APP/GH6.2.20]
Bedford Borough Council 21 August 2024	In general, BBC is in agreement regarding this aspect's approach as set out by the Applicant and makes no further	Noted	Not Applicable



Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	comment in this regard.		
Bedford Borough Council 21 August 2024	Without labouring on the matter of potential ground leaching and contamination from the BESS facility, it should be highlighted that the Applicant themselves has noted that the Site comprises 'fluvial sand and gravel deposits associated with the River Nene', a substrate that can facilitate the easy movement of contaminants in the soil and groundwater.	Noted	This is addressed in Chapter 22: Ground Conditions and Contamination [EN010170/APP/GH6.2.22].
West Northamptonshire 22 August 2024	No comment	Noted	Not Applicable
North Northamptonshire Council 22 August 2024	The safeguarding of minerals is given local and national importance in Section 17 of the NPPF (Facilitating the sustainable use of minerals) and The Northamptonshire Minerals and Waste Local Plan (Adopted July	Noted	Not Applicable





Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	2017). It is noted that the Scheme will affect areas of safeguarded mineral resource and has the potential to affect allocated and/or permitted mineral workings. It is welcomed by North Northamptonshire Council that a Minerals Assessment will be scoped in the Environmental Statement		
Milton Keynes City Council 17 September 2024	Establishing the significance of the impact on mineral resources needs to consider the extent, magnitude, duration and reversibility of the scheme as well as the extent, likely quality and situation of the mineral resource. While the scheme would be operational over approximately 60 years it would ultimately be a temporary land use, and any mineral resources present would not be	A Mineral Resource Assessment is being undertaken in accordance with best practice as part of ES	Section 11.8





Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	<p>permanently sterilised. Notwithstanding this, to enable a full assessment of the level of impact the scheme would have on mineral resources it would be appropriate for further details to be provided in the final Environmental Statement (ES) with respect to the presence of, extent, likely quality, and siting of any mineral resources within Site G. A Mineral Sterilisation Appraisal/Mineral Resource Assessment (MSA/MRA) should be carried out to inform the Mineral Assessment that is proposed to form part of the ES. It is recommended this follows best practice for MSA/MRA as set out in Mineral Safeguarding in England Good Practice Advice British Geological</p>		



Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	Survey 2011, Mineral Safeguarding Practice Guidance (Mineral Products Association & Planning Officers Society) April 2019, and the Minerals section of the Planning Practice Guidance.		

### Statutory Consultation

- 11.2.2 Further consultation in response to formal pre-application engagement was undertaken through the Preliminary Environmental Information Report (PEIR). **Table 11.2** outlines the statutory consultation responses relating to minerals and how these have been addressed through the ES.
- 11.2.3 Responses to the Statutory Consultation are outlined in the Consultation Report [EN010170/APP/GH5.1].

**Table 11.2: Statutory Consultation Comments**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
Bedford Borough Council 18 December 2024	It is noted that BBC do not have a full complement of in-house technical disciplines to respond to such detailed chapter aspects and consequently reserves the right to comment on such chapter aspects through	Noted	Not Applicable



Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	technical working groups and future consultation		
North Northamptonshire Council December 2024	It is noted that a Minerals Assessment will be scoped in the ES. NNC Minerals Officer note the scope and extent of the PEIR and support the ongoing consultation with NNC as the Minerals and Waste Authority, to assess possible effects to minerals once the final route of the Cable Corridor has been confirmed.	Noted, this ES has assessed the final Cable Route Corridor.	Section 11.8
Milton Keynes City Council 18 December 2024	In general, it is considered that the PEIR clearly sets out the preliminary findings of the Environmental Impact Assessment (EIA). Comments have been received from specialist officers within the Council, but in the main they concur with the conclusions in the PEIR, and	Noted	Not Applicable



Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	are therefore not repeated here.		
Bozeat Parish Council Undated	Cumulative impacts on climate change and minerals should not be scoped out. The loss of productive agricultural land reduces resilience to climate change, and the sterilisation of multiple mineral extraction sites could lead to shortfalls and unmet needs.	Cumulative impacts on climate change and minerals are addressed in this ES.  This chapter considers the issue of sterilisation of mineral resources and the impact this could have on future mineral supply	Cumulative impacts are addressed in Chapter 25 [EN010170/APP/GH6.2.25].  The mineral sterilisation and future mineral needs are addressed in Section 11.8

### 11.3 Legislation, Planning Policy and Guidance

11.3.1 This section provides an overview of the legislation, planning policy and guidance against which the Scheme will be considered for minerals.

11.3.2 Minerals are important national resources and adequate and steady supplies are vital for development and sustaining the economy and society. Minerals are a finite natural resource that can only be worked where they are found. A key aspect of sustainable development is the conservation and safeguarding of non-renewable resources for future generations. As such it is important that other development does not needlessly prevent the future extraction of mineral resources.

#### Legislation

##### *The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017*

11.3.3 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) (Ref 11.3) require consideration to be given to the use of natural resources, in particular land (including land take) and material assets. In this case the Scheme would occupy a large surface area and consideration needs to be given to any likely significant effects this may have on the existing geology and identified mineral resources.



## Planning Policy

### National Planning Policy

#### National Policy Statement (NPS) for Energy EN-1.

11.3.4 The Overarching National Policy Statement for Energy (EN-1) (Ref 11.4) was designated on the 17 January 2024.

11.3.5 Paragraph 5.11.19 EN-1 states:

*“Applicants should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place.”*

11.3.6 Paragraph 5.11.28 states that:

*“Where a proposed development has an impact upon a Mineral Safeguarding Area (MSA), the Secretary of State should ensure that appropriate mitigation measures have been put in place to safeguard mineral resources.”*

#### NPS for Renewable Energy Infrastructure EN-3.

11.3.7 National Policy Statement for Renewable Energy Infrastructure (EN-3) (Ref 11.5) was designated on the 17 January 2024. There are no specific references to mineral safeguarding within EN-3 however in paragraph 2.1.4 it states:

*“The policies set out in this NPS are additional to those on generic impacts set out in EN-1. Applicants should show how their application meets the requirements in EN-1 and this NPS, applying the mitigation hierarchy, as well as any other legal and regulatory requirements”.*

#### National Policy Statement for Electricity Networks Infrastructure (EN-5)

11.3.8 National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 11.6) was designated on 17 January 2024. There are no specific references to mineral safeguarding within EN-5 however in paragraph 1.3.2 it states:

*“This NPS does not seek to repeat the material set out in EN-1 or EN-3. EN-1 applies to all applications covered by this NPS unless stated otherwise...”*

#### National Planning Policy Framework

11.3.9 The National Planning Policy Framework (NPPF) (Ref 11.7) 2023 together with the accompanying Planning Practice Guidance (PPG) set out the Government’s planning policies for England for the particular purpose of making development plans and deciding applications under the Town and Country Planning Act 1990. The NPPF is an important and relevant matter under the Planning Act 2008.

11.3.10 The need to safeguard mineral resources is reflected in NPPF, in paragraph 215 it states:

*“It is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. Since minerals are a finite natural resource, and can only be worked where they are*



*found, best use needs to be made of them to secure their long-term conservation.”*

11.3.11 Relevantly, it goes on in paragraph 216 to state that planning policies should:

*“(a) provide for the extraction of mineral resources of local and national importance……;”*

and

*“c) safeguard mineral resources by defining Mineral Safeguarding Areas and Mineral Consultation Areas; and adopt appropriate policies so that known locations of specific minerals resources of local and national importance are not sterilised by non-mineral development where this should be avoided (whilst not creating a presumption that the resources defined will be worked);”*

11.3.12 In paragraph 218 it continues:

*“Local planning authorities should not normally permit other development proposals in Mineral Safeguarding Areas if it might constrain potential future use for mineral working.”*

*National Planning Practice Guidance: Minerals*

11.3.13 The National Planning Practice Guidance (PPG) Minerals (October 2014) (Ref 11.7) confirms that minerals ‘make an essential contribution to the Country’s prosperity and quality of life’. Paragraph 007 of the Minerals PPG states that:

*“Mineral planning authorities are encouraged to plan for minerals extraction using Ordnance Survey-based proposals maps and relevant evidence provided by the minerals industry and other appropriate bodies... This approach will allow mineral planning authorities to highlight areas where mineral extraction is expected to take place, as well as managing potentially conflicting objectives for use of land.”*

11.3.14 Designating Mineral Safeguarding Areas (MSA) is the means by which the planning system ensures that potential mineral resources are not needlessly sterilised. The presence of a MSA does not necessarily preclude other forms of development being permitted nor confer any presumption that the mineral will be worked. It is a policy tool to raise awareness that minerals may be sterilised by proposed development and that this should be taken into account in the decision-making process.

11.3.15 Paragraph 008 advises Minerals Planning Authorities (MPAs) that they should plan for the steady and adequate supply of minerals, including in the following way:

*“1. 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...”*



## **Local Planning Policy**

### **Northamptonshire Minerals and Waste Local Plan 2017**

- 11.3.16 The Northamptonshire Minerals and Waste Local Plan (July 2017) (Ref 11.8, Ref 11.9) (NM&WLP) sets out the key principles to guide the future winning and working of minerals in Northamptonshire up to 2031. Although prepared and adopted by the former County Council, the Minerals Plan remains extant and applies to both West and North Northamptonshire Councils. It sets out the development management policies against which planning applications for minerals and waste development will be considered. It also seeks to ensure the protection of mineral resources from the risk of sterilisation by development which potentially prevents future extraction. The Scheme potentially impacts on permitted/allocated mineral workings and extends into safeguarded mineral areas.
- 11.3.17 The NM&WLP, through Policy 1, makes provision for the extraction of 10 million tonnes of sand and gravel and 7.8 million tonnes of crushed rock over the Plan period 2011 to 2031. The Policy also makes provision for the maintenance of landbank of at least seven years for sand and gravel, and ten years for crushed rock. This is intended to be achieved from both extensions to existing sites and new sites. The NM&WLP makes allocations as required to meet this provision. Owing to the local geology the Scheme does not have any implications for crushed rock resources in Northamptonshire.
- 11.3.18 Policy 4 identifies sites for the provision of sand and gravel it states:
- “A supply of sand and gravel to contribute to meeting the provision of sand and gravel will be provided for by: production since 1 January 2011, sites with planning permission as at 1 January 2016 and the following allocated sites:*
- *Pre-glacial and glacial areas*
  - *M1: Milton Malsor 1.2 million tonnes (approximately)*
  - *M2: Strixton - Bozeat 1.5 million tonnes (approximately)*
  - *Central Nene Valley*
  - *M3: Heyford 1.4 million tonnes (approximately)*
  - *M4: Earls Barton West Extension 2.6 million tonnes (approximately)*
  - *Great Ouse Valley*
  - *M5: Passenham Extension South 0.2 million tonnes (approximately)*
  - *Other locations*
  - *M6: Elton Extension 0.85 million tonnes (approximately).”*
- 11.3.19 The Scheme potentially impacts on site M2 as well as two existing quarry areas and the mineral consultation areas (MSCs) associated with these existing quarries and allocations.





11.3.20 The Scheme also extends into safeguarded mineral areas. NM&WLP paragraphs 6.85 to 6.99 address the impact other forms of development may have for minerals development, through either surface development sterilising mineral resources or encroachment of incompatible development affecting the operational viability. The NM&WLP makes provision to ensure mineral resources of economic importance are safeguarded using MSAs and MSCs.

11.3.21 Policy 28 states:

*“Mineral resources of economic importance will be safeguarded from sterilisation by Incompatible non-mineral development through the designation of Minerals Safeguarding Areas.*

*Development of a significant nature within Minerals Safeguarding Areas will have to demonstrate that the sterilisation of proven mineral resources of economic importance will not occur as a result of the development, and that the development would not pose a serious hindrance to future extraction in the vicinity. If this cannot be demonstrated, prior extraction will be sought where practicable.*

*Development of a non-mineral related nature within the Mineral Safeguarding Areas which is incompatible with the safeguarding of minerals should not proceed unless:*

- *it can be clearly demonstrated to the satisfaction of the Mineral Planning Authority that the mineral concerned is no longer of any value, or potential value, or that substantial (economically viable) deposits of a similar quality exist elsewhere in the county, or*
- *the mineral can be extracted, where practicable, prior to the development taking place, or*
- *the incompatible development is of a temporary nature and can be completed with the site restored to a condition that does not inhibit extraction within the timescale that the mineral is likely to be needed, or*
- *the development is of a minor nature which would not inhibit extraction of the mineral resource, or*
- *there is an overriding need for the development.”*

*Milton Keynes Minerals Local Plan 2017*

11.3.22 The Milton Keynes Minerals Local Plan (July 2017) (Ref 11.10, Ref 11.11) (MKMLP) sets out the key principles to guide the future winning and working of minerals in Milton Keynes until 2032. It also sets out the development management policies against which planning applications for minerals and waste development will be considered. It also seeks to ensure the protection of mineral resources from the risk of sterilisation by development which potentially prevents future extraction. The Scheme does not impact on any permitted/allocated mineral workings in Milton Keynes however it does extend into several MSAs.

11.3.23 MKMLP Policy 18 Minerals Safeguarding and Consultation Areas Infrastructure, states:



*“Mineral resources of local and national importance within Milton Keynes include sand and gravel and the White and Blisworth Limestone formations. These resources will be safeguarded from unnecessary sterilisation by other development through the designation of Mineral Safeguarding Areas.*

*Planning permission will not be granted for non-mineral development that would lead to the unnecessary sterilisation of mineral resources within a Minerals Safeguarding Area unless it can be demonstrated that:*

- the mineral concerned is not of economic value or evidence confirms the absence of mineral resources, the proposed development is temporary or of a nature that would not sterilise the mineral resource or hinder future extraction,*
- the proposed development is temporary and would not sterilise the mineral resource or hinder future extraction,*
- prior extraction can occur where practicable and environmentally feasible and within a reasonable timescale,*
- there is an over-riding need for the development, or*
- the development is exempt.*

*In determining whether prior extraction is feasible an assessment of the mineral resource including detailed site investigations should be undertaken to identify the quality, quantity and extent of the resource, the economic viability of prior extraction and the proportion of the mineral to be used on-site and saleable aggregate. The assessment should also take account of the size, nature and need for the (non-minerals) development as well as the proposed phasing of operations and construction of the non-mineral development.*

*In the event that the non-mineral development is delayed or not implemented the site must be restored to a stable landform and appropriate after-use.”*

### Guidance

#### Mineral Safeguarding in England Good Practice Advice 2011

- 11.3.24 Mineral Safeguarding in England Good Practice Advice British Geological Survey (BGS) 2011 (Ref 11.12) was designed to complement the introduction of national policies to prevent the unnecessary sterilisation of mineral resources through mineral safeguarding. Mineral safeguarding introduced an obligation on all mineral planning authorities to define MSAs and protect them with appropriate policies in their minerals local plans. The good practice advice note provided guidance on the methodology for delineating mineral safeguarding areas and appropriate policies to protect them. Mineral Safeguarding Practice Guidance (Mineral Products Association & Planning Officers Society) April 2019 (Ref 11.13) provides practical advice on the implementation of policy for safeguarding mineral resources and infrastructure through plan-making and development management.



## 11.4 Assessment Methodology and Significance Criteria

- 11.4.1 The methodologies described in the following section have been developed in line with the relevant guidance for assessing potential significant effects.

### Study Area

- 11.4.2 The Scheme comprises of nine sites (the Sites) described as Green Hill A, A.2, B, C, D, E, F, G and Green Hill BESS which accommodate the ground mounted solar photovoltaic generating station and associated development. The Sites are connected by the Cable Route Corridor connecting the solar array Sites to the National Grid at the Grendon Substation Point of Connection. Green Hill A, A.2 and B lie within West Northamptonshire, Green Hill C, D, E, F and Green Hill BESS lie within North Northamptonshire whilst Green Hill G lies within Milton Keynes. The operational life of the Scheme is anticipated to be 60 years. Chapter 3: The Development Site [EN010170/APP/GH6.2.3] provides a description of the existing conditions within and surrounding the Order Limits. Chapter 4: Scheme Description [EN010170/APP/GH6.2.4] provides a description of the proposed Scheme including the physical characteristics and key activities.
- 11.4.3 The assessment in this chapter has considered the full extent of the area occupied by the Scheme (being the Sites and the Cable Route Corridor), together with a margin extending 500m from the edge of the Sites and the Cable Route Corridor (Study Area). The 500m boundary is based on the consultation requirements for proposals considered to be incompatible with the affected minerals as set out in NM&WLP (Paragraph 6.108). This approach is also consistent with the buffers which have been applied to all MSAs in the MKMLP (Paragraph 6.5). Incompatible development close to MSAs and mineral consultation areas (MCAs) may lead to sterilisation of part of the resource. The BGS good practice advice suggests that it may therefore often be appropriate to extend the MSAs beyond the resource boundary to take account of such risks. Although the solar arrays are not considered to be particularly sensitive developments, adopting a 500m margin does ensure that all potential impacts on mineral resources including existing mineral extraction sites, are considered. The extent of the Study Area is shown in Volume 2, Figures 11.1 to 11.5 [EN010170/APP/GH6.4.11.1 to 5].

### Sources of Information

- 11.4.4 The relevant information sources used for the assessment are as follows:
- BGS in their Mineral Resource Reports for Northamptonshire (Ref 11.14) and Buckinghamshire and Milton Keynes (Ref 11.15);
  - Northamptonshire Minerals and Waste Local Plan 2017; and
  - Milton Keynes Minerals Local Plan 2017.
- 11.4.5 As applicable information has been drawn from planning application documents relating to quarry developments potentially affected by the Scheme.

### Impact Assessment Methodology

- 11.4.6 The assessment of likely significant effects identifies how the Scheme is predicted to affect identified mineral resources and the significance of those



effects. The assessment process takes account of published good practice guides such as the Mineral Safeguarding in England Good Practice Advice British Geological Survey 2011 and other relevant policies outlined above.

- 11.4.7 The predicted significance of the effect is determined through a standard method of assessment based on professional judgement which considers both sensitivity of identified receptor and magnitude of change as detailed in **Table 11.4** below.
- 11.4.8 The mineral resources that have been assessed have been identified by the BGS in their Mineral Resource Reports for Northamptonshire (Ref 11.14) and Buckinghamshire and Milton Keynes (Ref 11.15) and through allocations, areas of search and MSAs contained in the NM&WLP and the MKMLP.
- 11.4.9 The effect of the Scheme has been considered as a whole, there being no distinction in terms of effect on mineral resources between construction, operation and decommissioning phases on the basis that as soon as construction commences the impact on mineral resources effectively occurs and remains until such time as the Scheme is fully decommissioned.
- 11.4.10 Assessment of the likely significant effects of the Scheme on mineral resources considers several parameters including extent, magnitude, duration and reversibility of the development as well as the extent, likely quality and situation of the mineral reserve. The significance is assessed on the effects on identified mineral resources in relation to national and local planning policy.

#### **Sensitivity of Receptors**

- 11.4.11 The significance of the impact for mineral resources can be ranked using professional judgement in terms of the national and local policy objectives.
- 11.4.12 A high sensitivity receptor is an existing quarry or site-specific allocation for future mineral working, this is because these sites have already been through a selection process and are either contributing or will be making a contribution to sustaining the economy and society. A high sensitivity site would also include safeguarded nationally scarce mineral resources or mineral resources of exceptional quality.
- 11.4.13 A medium sensitivity receptor is an identified local or widespread mineral resource which is protected so other development does not needlessly prevent the future extraction of mineral resources to ensure non-renewable resources are conserved and safeguarded for future generations.
- 11.4.14 A low sensitivity site does not contain any known mineral resources of economic interest.
- 11.4.15 **Table 11.3** outlines the significance of the effect taking into account the status of the receptor.

**Table 11.3: Criteria for Assessing Sensitivity of Receptors:**

Sensitivity	Definition
High	Allocated or existing mineral working
Medium	Safeguarded local or widespread mineral resource



Sensitivity	Definition
Low	No identified mineral resource
Negligible	As for low sensitivity, but with only indirect, tenuous, and unproven links between sources of impact and mineral resources.

### **Magnitude of Impacts**

- 11.4.16 In terms of the magnitude of impacts for mineral resources this can range from being a high to a neutral or negligible impact development.
- 11.4.17 A high impact development prevents the future exploitation of a known mineral resource. This can either be through direct destruction of the resource through ground disturbance or effectively physically preventing access to a mineral resource by way of surface development.
- 11.4.18 A medium impact development for a mineral resource would add further significant constraints for future exploitation. This could either be in the form of introducing sensitive land uses adjacent to the mineral resource or by bisecting the resource with for example a roadway, cable or pipeline. These add constraints to future mineral working which would inhibit the full exploitation of the resource.
- 11.4.19 A low impact development either does not inhibit future exploitation of the mineral resource or includes mitigation to ensure the mineral resource is not sterilised, for example, by winning and working the mineral reserve prior to the development taking place.
- 11.4.20 A negligible impact development has a slight or peripheral impact on a mineral resource but has no significant impact for current or future exploitation of that resource. This could include for example a development on the margin of an identified mineral resource where the quantity and quality of the resource is likely to be poorest.
- 11.4.21 A neutral impact development does not affect any identified or potential mineral resource in any way.
- 11.4.22 **Table 11.4** outlines the magnitude of the impact for this assessment.

**Table 11.4: Criteria for Assessing Magnitude of Impacts (positive or negative)**

Magnitude	Definition
High	The total loss or substantial alteration to key elements/features of the baseline (pre-development) conditions, such that the post development character/composition/attributes will be fundamentally changed, such as the permanent sterilisation of identified mineral resource.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions, such that post development character/composition/attributes of the baseline will be



Magnitude	Definition
	materially changed such as permanent constraint to future exploitation of identified mineral resource.
Low	A slight shift away from baseline conditions. As change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation such as a temporary constraint to future exploitation of identified mineral resource.
Negligible	Very little change from baseline conditions. The change will be barely distinguishable and approximating to a non-change situation.
Neutral	No change from baseline conditions.

### **Assessment of Significance**

- 11.4.23 Taking account of the nature of the mineral resource affected and the nature of the development proposed, **Table 11.5** sets out the significance rating categories. Those impacts being assessed as moderate and above are considered to be significant in the context of the assessment. Where an impact is 'moderate or minor' professional judgment will be used to determine the appropriate level of significance.
- 11.4.24 **Table 11.5** outlines the criteria for assessing the significance of effects magnitude of the impact.

**Table 11.5: Criteria for Assessing the Significance of Effects.**

Sensitivity	High	Medium	Low	Negligible
Magnitude				
High	Major	Major or Moderate	Moderate	Moderate or Minor
Medium	Major or Moderate	Moderate	Moderate or Minor	Minor
Low	Moderate	Moderate or Minor	Minor	Negligible
Negligible	Moderate or Minor	Minor	Negligible	Negligible
Neutral	Neutral	Neutral	Neutral	Neutral

## **11.5 Assessment Assumptions and Limitations**

- 11.5.1 The methodology for the minerals assessment has considered the following assumptions:





- The assessment is based on a desktop-based exercise only and relies wholly on published geological information;
- No mineral trial pit or boreholes have been sunk specifically in association with this Scheme. In addition, no mineral samples have been collected for analysis to determine whether any identified deposits are of economic value;
- This assessment assumes that all identified safeguarded mineral deposits are present and are of sufficient depth and quality to be of economic value; and
- In view of the nature of the Scheme and the likely mineral resources affected it is considered that a desktop-based assessment using published information is an adequate basis to consider the impact on mineral resources.

## **11.6 Baseline Conditions**

- 11.6.1 This section describes the baseline environmental characteristics for the Scheme and surrounding areas with specific reference to mineral resources.

### **Existing Baseline**

- 11.6.2 The existing baseline conditions are derived from desk-based studies.
- 11.6.3 The likely mineral resources within the Study Area have been assessed using published geological information from the BGS and the MPAs together with relevant available published borehole information and a review of current and historic mineral workings in the vicinity.
- 11.6.4 The BGS Mineral Resource Maps provide the best available geological and resource information on the broad extent of minerals resources in Northamptonshire and Milton Keynes and have been used to assist the identification of mineral resources in the NM&WLP and MKMLP. The Scheme has been considered in the context of the applicable mineral resource planning policies.

### **Geological Context**

- 11.6.5 The mineral interest is determined by the underlying geology. Within the Study Area the surface bedrock is a series of sedimentary beds dating from the Jurassic period. The oldest occurring bedrock is ironstone but this is overlain in places by outliers of younger sandstones, siltstones and limestones. The strata is generally progressively younger moving from west to east across the Study Area. The bedrock is overlain in places by quaternary superficial deposits of alluvium, clays, silts, sand and gravels principally of fluvial or glacial origin.
- 11.6.6 Some of the superficial deposits have been identified as being of mineral interest by the BGS and are safeguarded mineral resources in either the NM&WLP or the MKMLP. Historically several other mineral deposits have been exploited within the Study Area including Ironstone (close to Green Hill A and B) and clay (close to Green Hill E) are described further below.

### **Green Hill A**





- 11.6.7 A review of BGS published geological information indicates that underlying bedrock is a series of Jurassic sedimentary deposits which broadly become progressively younger from the south and west to the north and east. The oldest being the Northampton Sand Formation. The Northampton Sand Formation is an ironstone deposit which historically was worked in large scale opencast quarries in Northamptonshire, particularly around Corby, Wellingborough and Kettering. Ironstone production ceased with the closure of the Corby Iron and Steel Plant in 1980. Since then, technological and economic changes within the UK Steel industry have led to the demise of the Northampton Sand Formation as an iron ore deposit and it is no longer considered as a mineral resource. However, there are numerous extant permissions for ironstone and overlying minerals within Northamptonshire. Some of these permitted areas are actively working the ironstone and the overlying Lincolnshire limestone for aggregate uses. BGS identify an historic consented ironstone area immediately north of Green Hill A on the west side of Broughton Road. It does not appear that this site has ever been worked.
- 11.6.8 Within Green Hill A east of Newland Road and progressing north and east the Northampton Sand Formation gives way to sandstones and siltstones belonging to Stamford Member and then the mudstones associated with Rutland Formation. Neither deposit is specifically identified as being of any mineral resource value.
- 11.6.9 Much of the bedrock particularly to the east of Green Hill A is hidden by the Oadby Member particularly north of Walgrave and east of Newland Road. The Oadby Member is a poorly sorted superficial sedimentary deposit from Quaternary period. It consists of a mix of weathered rock with lenses of sand and gravel, clay and silt. Around the village of Old and on the higher land to the north of Green Hill A along Broughton Road towards the junction with Newland Road, BGS identify isolated Mid Pleistocene sedimentary superficial Glaciofluvial deposits of sand and gravel. Following the water courses feeding into the Pitsford Reservoir to the southwest of Green Hill A, BGS identify Quaternary sedimentary superficial deposits of Alluvium. The Alluvium is described as a mix of clay, silt, sand and gravel. BGS identify the Glaciofluvial and Alluvium deposits as sand and gravel mineral resources.
- 11.6.10 These sand and gravel resources are safeguarded through the identification of MSAs shown in the NM&WLP. The majority of Green Hill A is situated within a sand and gravel MSA (see Volume 2, Figure 11.1) **[EN010170/APP/GH6.4.11.1]**.
- 11.6.11 The Cable Route Corridor connecting Green Hill A to Green Hill A.2 also passes through the same sand and gravel MSA. The Scheme therefore has the potential to temporarily sterilise an identified mineral deposit at this location for the life of the Scheme.
- 11.6.12 Green Hill A and the Cable Route Corridor connecting Green Hill A to Green Hill A.2 have been assigned as medium sensitivity receptors.
- Green Hill A.2
- 11.6.13 BGS published geological information indicates that underlying bedrock within Green Hill A.2 is a series of Jurassic sedimentary deposits which broadly become progressively younger from west to east. The oldest being sandstones and



siltstones belonging to the Stamford Member which outcrop along the western side of the Site. Approximately one third of the eastern side is underlain by limestone and mudstones associated with Wellingborough Limestone Member. These deposits are separated by a relatively narrow irregular shaped outcrop of mudstone belonging to the Rutland Formation. None of these deposits are specifically identified as being of any mineral resource value.

- 11.6.14 Over the majority of the Green Hill A.2, BGS mapping shows the bedrock overlain by the Oadby Member (referred to above in Section 11.6.9). Immediately west of the Green Hill A.2 and following the water course feeding into the Pitsford Reservoir, BGS maps identify Quaternary superficial deposits of Alluvium comprising of clay, silt, sand and gravel. BGS show the Alluvium deposits as sand and gravel mineral resources.
- 11.6.15 These sand and gravel resources are safeguarded through the identification of an MSA shown in the NM&WLP. The western two thirds of Green Hill A.2 are within a sand and gravel MSA (see Volume 2, Figure 11.1) **[EN010170/APP/GH6.4.11.1]**. The Scheme therefore has the potential to temporarily sterilise identified mineral deposits at this location for the life of the Scheme.
- 11.6.16 Green Hill A.2 as a receptor has been assigned a medium sensitivity.

#### Green Hill B

- 11.6.17 BGS published geological information indicates that the underlying bedrock within Green Hill B is predominantly the Rutland Formation with a small area of the Stamford Member occurring in the southwest corner. Both deposits are referred to above and neither are specifically identified as being of any mineral resource value.
- 11.6.18 Over the majority of Green Hill B, BGS mapping show the bedrock overlain by the Oadby Member (referred to above in Section 11.6.9). Surrounding the Site BGS map multiple isolated pockets of Mid Pleistocene sedimentary superficial Glaciofluvial deposits of sand and gravel. BGS identify the Glaciofluvial deposits as sand and gravel mineral resources.
- 11.6.19 The NM&WLP identifies a sand and gravel MSA to the north and west of Green Hill B and a further MSA to the south (see Volume 2, Figure 11.2) **[EN010170/APP/GH6.4.11.2]**. Green Hill B encroaches into these safeguarded areas therefore has the potential to temporarily sterilise an identified mineral deposit at this location for the life of the Scheme.
- 11.6.20 The first 660m of the Cable Route Corridor, to the northeast of Green Hill B, connecting this site to Green Hill C is also within a safeguarded area.
- 11.6.21 Pitsford Quarry lies 1.6 km to the southwest of Green Hill B, this is a permitted sand and ironstone quarry. The MCA for this site is 1.1 km from Green Hill B and outside the Study Area.
- 11.6.22 Green Hill B and part of the Cable Route Corridor connecting Green Hill B to Green Hill A.2 have been assigned as medium sensitivity receptors.

*Green Hill C, D and E*

- 11.6.23 Within Green Hill C, the bulk of underlying bedrock is sandstone and siltstone belonging to the Stamford Member. In the southwest this has been eroded away by a small water course to expose the Northampton Sand Formation. In the northwest of the Site the Stamford Member is overlain by interbedded limestone and mudstone belonging to the Wellingborough Limestone Member. Except for a small area to the southwest the bedrock is covered by the Oadby member superficial deposit. None of these deposits are specifically identified as being of any mineral resource value.
- 11.6.24 Broadly the underlying bedrock in Green Hill D follows its north south orientation. In the southwest, the water course running south along the western boundary has exposed the Northampton Sand Formation, moving east the sandstones and siltstones belonging to Stamford Member outcrop in a narrow strip aligned north south, moving further east a narrow strip of limestone and mudstone belonging to the Wellingborough Limestone Member outcrops. Finally, in the northeastern corner mudstone belonging to the Rutland Formation occurs. The bedrock is largely covered on the eastern side by superficial deposits belonging to the Oadby Member and Bozeat Till. Bozeat Till is described as a poorly sorted superficial sedimentary deposit from Quaternary period consisting of a mix of weathered rock, clays and silts. None of these deposits are specifically identified as being of any mineral resource value.
- 11.6.25 Within Green Hill E, BGS mapping shows that within much of the central part of this site the bedrock is sandstone and siltstone belonging to the Stamford Member. In the south of the Site and along the southeastern and southwestern sides the Northampton Sand Formation is exposed. Moving to the north of the Site mudstone belong the Rutland Formation with a narrow band of limestone and mudstone of the Wellingborough Limestone Member outcrops. At the very most northern part of this site the Blisworth Limestone Formation occurs. Blisworth Limestone Formation is a Jurassic sedimentary deposit consisting of pale grey to off-white or yellowish limestones with thin marls and mudstones. Much of the bedrock within Green Hill E, particularly north of Wilby Road is overlain by the superficial deposits belonging to the Oadby Member. None of these deposits are specifically identified as being of any mineral resource value.
- 11.6.26 Immediately east of Green Hill E and on the north side of Mears Ashby Road is a small historic quarry now regenerated as an area of woodland. BGS identify this as a former clay pit however North Northamptonshire Council refer to it as a former sand and gravel pit. There are two other historic quarry areas to the south of Green Hill E to the east of Earls Barton. The nearest is 350 metres from the Site boundary. BGS identify both as former clay pits in view the of common geology it is considered all three were clay pits probably associated with local brick making.
- 11.6.27 Other than identifying the presence of the historic quarry areas, the BGS data do not identify any mineral interest within Green Hill C, D or E.
- 11.6.28 None of Green Hill C, D and E are identified as lying within a MSA or MCA in the NM&WLP. The Cable Route Corridor connecting Green Hill C and D is also



outside any MSA or MCA (see Volume 2, Figure 11.3) **[EN010170/APP/GH6.4.11.3]**.

- 11.6.29 Green Hill C, D and E and the interconnecting Cable Route Corridors connecting Green Hill A2 to Green Hill C, Green Hill C to Green Hill D and Green Hill D to Green Hill E have been assigned as low sensitivity receptors.
- 11.6.30 The Cable Route Corridor from Green Hill E to the BESS site (see Volume 2, Figures 11.3 and 11.1.4) **[EN010170/APP/GH6.4.11.3 & 4]**., crosses a sand and gravel MSA south of Earls Barton. These are fluvial sand and gravel deposits associated with the River Nene. These deposits are actively being worked and the Cable Route Corridor passes through several MCAs, an unworked area of a permitted quarry (Earls Barton Spinney Quarry) and a partially worked and unrestored area of a second quarry (Earls Barton Quarry) (see Volume 2, Figure 11.1.4) **[EN010170/APP/GH6.4.11.4]**. The Scheme therefore has the potential to affect future mineral supplies extraction within Northamptonshire and partially sterilise a permitted mineral deposit.
- 11.6.31 The Cable Route Corridor from Green Hill E to the BESS has been assigned as a high sensitivity receptor.

*Green Hill Battery Energy Storage Systems (BESS)*

- 11.6.32 The Green Hill BESS is underlain by the Mudstone belonging to the Whitby Mudstone Formation. The bedrock is overlain by superficial Sedimentary deposits consisting of Quaternary Alluvium deposit of clay, silt, sand and gravel in the north, Quaternary Ecton Member of sand and gravel deposits and Mid Pleistocene Glaciofluvial Deposits of sand and gravel to the south.
- 11.6.33 BGS identify the superficial deposits within the Green Hill BESS, together with a whole swathe of land either side of the River Nene as being a sand and gravel mineral resource. The Nene Valley has a long history of sand and gravel extraction evidenced by the many water bodies along the river, which are flooded former workings, and ongoing mineral extraction to the northwest of Green Hill BESS.
- 11.6.34 With the exception of the northeast corner of the Green Hill BESS, where the sand and gravel has already been worked and the Site restored to a low level, Green Hill BESS is within a sand and gravel MSA shown in the NM&WLP (see Volume 2, Figure 11.4) **[EN010170/APP/GH6.4.11.4]**. The Scheme therefore has the potential to temporarily sterilise an identified mineral deposit at this location for the life of the Scheme.
- 11.6.35 Green Hill BESS as a receptor has been assigned a medium sensitivity.

*Green Hill F*

- 11.6.36 BGS published geological information indicates that exposed underlying bedrock within Green Hill F is a series of Jurassic sedimentary deposits which broadly become progressively younger from northwest to the south. The pattern of the surface bedrock being in part a reflection of the geomorphology of Green Hill F.
- 11.6.37 The oldest exposures are Mudstone belonging to the Whitby Mudstone Formation which occurs in the lowest lying parts of Green Hill F in the northwest corner. This deposit is progressively hidden beneath exposures of sandstone and



siltstones belonging to the Stamford Member, limestone and mudstone belonging to the Wellingborough Limestone formation, mudstone belonging to the Rutland Formation and limestone belonging to the Blisworth Limestone Formation as the land rises away from the low point. Broadly the Blisworth Limestone Formation occurs within Green Hill F towards the A509 and either side of the Easton Lane between Bozeat and Easton Maudit.

- 11.6.38 Progressing south within Green Hill F, mudstone belonging to the Blisworth Clay Formation occurs in a band east west across Green Hill F, south of Low Farm. Further south and extending beyond the boundary of Green Hill F all the way to Green Hill G, see below, is an extensive area of limestone bedrock belonging to the Cornbrash Formation. None of these bedrock deposits are specifically identified as being of any mineral resource value within Northamptonshire.
- 11.6.39 The bedrock is overlain by a series of Quaternary superficial deposits, south of the Easton Lane and extending east from the A509, deposits belonging to the Oadby Member occur. These are fringed by deposits of Bozeat Till. To the northeast of Bozeat, north of Easton Lane, several isolated pockets of superficial Milton Sand (sand and gravel) deposits are present. These are broadly orientated north south between 300 and 500m west of the A509. Milton Sand deposits are pre-glacial deposits probably associated with a former river system. Associated with the various existing water courses that run through or alongside Green Hill F, superficial sedimentary deposit of Alluvium, clay silt, sand and gravel occur.
- 11.6.40 BGS identify the superficial deposits of Milton Sand as a sand and gravel mineral resource. These deposits have already been partly exploited in the past, most recently by the now closed workings at former Bozeat Quarry which abuts Green Hill F.
- 11.6.41 These sand and gravel resources are safeguarded through the identification of MSAs shown in the NM&WLP. The northern half of Green Hill F lies within a sand and gravel MSA, this is the area around the now exhausted Bozeat Quarry (see Volume 2, Figure 11.1.4) **[EN010170/APP/GH6.4.11.4]**. To the northeast of the worked area of Bozeat Quarry and north of Green Hill F is an allocation for future mineral extraction. The boundary of the Green Hill F includes the Bozeat Quarry haul road linking the quarry site to the A509 and providing vehicular access to the allocated mineral deposit. Green Hill F lies within the MCA associated with Bozeat Quarry and allocated extension.
- 11.6.42 Beyond the BESS site the Cable Route Corridor connecting Green Hill F to the BESS lies outside any safeguarded mineral deposits. The part of the Cable Route Corridor running to the west of Green Hill F connecting two parts of Green Hill F also lies outside any safeguarded mineral deposits. There are however safeguarded deposits within 160m of this part of the Cable Route Corridor which are within the Study Area. The Cable Route Corridor is not considered to have any impact on these safeguarded mineral resources.
- 11.6.43 The Scheme therefore has the potential to affect future mineral extraction within Northamptonshire, by potentially inhibiting the working of an allocated mineral deposit and temporarily sterilising other safeguarded mineral deposits at this location for the life of the Scheme.





- 11.6.44 In so far as Green Hill F affects the allocated mineral deposit to the northeast of the Site, it has been assigned a high sensitivity receptor. The remainder of Green Hill F which affects safeguarded mineral deposits has been assigned a medium sensitivity receptor.

Green Hill G

- 11.6.45 BGS published geological information indicates that for most of Green Hill G, the underlying bedrock is limestone belonging to the Cornbrash Formation. In the southeastern corner sandstone and siltstone belonging to Kellaways Sand Member outcrops this bedrock is surrounded by a thin margin of mudstone belonging to the Kellaways Clay Member.
- 11.6.46 The BGS show much of the bedrock to the north and centre of the Green Hill G is overlain by superficial deposits belonging to the Oadby Member. In the south of Green Hill G, a superficial deposit of Alluvium occurs associated with the watercourse crossing the Site.
- 11.6.47 The BGS minerals resource map identifies three mineral resources in the vicinity of Green Hill G. The northern half of Green Hill G is shown as containing a brick clay mineral resource. The resource is shown as extending east and west of Green Hill G and extending to the Milton Keynes administrative boundary. This same mineral resource is not shown extending into Northamptonshire on the BGS mineral resource mapping, possibly because there was no equivalent brick industry within Northamptonshire. The brick clay would be associated with Oxford Clay which underlies the Cornbrash Formation. The Peterborough Member of the Oxford Clay was an important resource for brickmaking in Buckinghamshire (including Milton Keynes). These clays were worked to provide the raw materials for brick manufacture at several locations within Buckinghamshire including near Bletchley. The Bletchley Brickworks closed in 1990. Following the closure of the brickworks this deposit is no longer exploited. The MKMLP states that 'Brick clay is not in demand in Milton Keynes, and it is unlikely that this will change in the long term; as such these resources are not considered to be of local or national importance and are not included in the MSAs.'
- 11.6.48 BGS map an area of Jurassic limestone associated with the Great Oolite Group extending south of Green Hill G (south of the A428) as a mineral resource. Within Great Oolite Group, the White Limestone Formation, Bilsworth Limestone Formation and the Cornbrash Formation have the most significant potential for crushed rock production for aggregate uses. The Great Oolite Group does not constitute a resource everywhere since some sequences contain more mudstones than others.
- 11.6.49 The third mineral resource identified by BGS are the sand and gravel deposits within the southern part of Green Hill G. These are both the superficial fluvial deposits and river terrace deposits.
- 11.6.50 The southern edge of Green Hill G lies within four MSAs shown in the MKMLP. Two for sand and gravel and two for limestone (see Volume 2, Figure 11.1.5) **[EN010170/APP/GH6.4.11.5]**. The first 760m of the Cable Route Corridor connecting Green Hill G to Green Hill F and the Green Hill BESS passes through the sand and gravel MSA shown in the NM&WLP. The Scheme therefore has the



potential to temporarily sterilise identified mineral deposits at this location for the life of the Scheme.

- 11.6.51 Green Hill G and the Cable Route Corridor connecting Green Hill G to Green Hill F have been assigned as medium sensitivity receptors.

#### Future Baseline

- 11.6.52 This section considers changes to the baseline conditions, described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would be in place. The future baseline scenarios are set out in Chapter 2: EIA Process and Methodology [EN010170/APP/GH6.2.2].
- 11.6.53 The baseline is the current geological strata, changes to which occur in timescales which are irrelevant to the Scheme.
- 11.6.54 However in absence of the Scheme, there will be some limited changes to the future baseline for mineral resources particularly south of Earls Barton as a consequence of ongoing mineral extraction operations. This does mean some existing mineral resources being exploited and therefore will be absent in future years. There are 2 active quarries affected by the Scheme, Earls Barton Quarry and Earls Barton Spinney Quarry, these are identified on Figure 11.1.4 (see Volume 2) [EN010170/APP/GH6.4.11.4]. In terms of Earls Barton Quarry, conditions attached the current planning permission (planning permission reference NN/23/00014/MINVOC dated 29 August 2023 Appendix 1) require all mineral extraction to cease by the 27 August 2026 and the restoration which includes inert landfilling, to be completed within 4 years of cessation of mineral extraction. Conditions attached the current planning permission (planning permission reference NN/22/00001/MINVOC dated 13 June 2022 Appendix 1) requires all mineral extraction within Earls Barton Spinney Quarry to be completed by 13 June 2026 with restoration of the quarry to be completed by 13 June 2027.

### **11.7 Embedded Mitigation Measures**

- 11.7.1 The way that potential environmental impacts have been or will be prevented, avoided or mitigated to reduce impacts to a minimum through design and/or management of the Scheme is outlined in this section and will be taken into account as part of the assessment of the potential effects. Proposed environmental enhancements are also described where relevant.
- 11.7.2 The following embedded mitigation measures for the have been incorporated into the Scheme's design:
- Within MSAs, the Cable Route Corridor has been designed so that wherever possible and subject to other constraints such as the protection of archaeological remains, veteran trees etc, it follows the edge of significant landscape features or existing infrastructure corridors rather than directly crossing open fields. Such an approach avoids creating a further obstruction to the future exploitation of mineral resources.
  - The layout of the Scheme incorporates the existing vehicular access between the mineral extraction allocation identified in the NM&WLP Policy





4 Site M2: Strixton - Bozeat and the A509. This access will be maintained for the life of the Scheme.

- Decommissioning and removal of plant and structures to restore the baseline condition for the identified mineral resources. (Infrastructure is only left in the ground such as cable ducts after decommissioning where these do not present any significant constraint to future mineral extraction).
- The Cable Route Corridor, south of Earls Barton incorporates the flexibility to allow cables to be installed in areas already subject to mineral extraction or routed to avoid remaining permitted mineral reserves, this is discussed further in paragraphs 11.8.21 and 22.
- Where the Cable Route Corridor crosses areas of permitted mineral extraction to the south of Earls Barton cables shall be installed using techniques which do not interfere with the efficient extraction of remaining mineral reserves.
- Adequate buffers and standoffs are incorporated into the Scheme's design to avoid any conflict between the development of the Scheme and the winning and working of mineral within the NM&WLP Policy 4 Site M2 allocation.

## 11.8 Assessment of Impacts and Effects

- 11.8.1 Section 11.6 of this Chapter sets out the reasoning for the sensitivity of the receptor for each site/length of Cable Route Corridors.
- 11.8.2 Considering the embedded mitigation measures as detailed in Section 11.7, the potential for the Scheme to generate effects has been assessed using the methodology detailed in Section 11.4 of this Chapter. In the sections below, associated effects during the construction, operation and maintenance and decommissioning phases of the Scheme are discussed as a whole, there being no distinction between the three phases.
- 11.8.3 The National Planning Policy Framework requires MPAs to define MSAs to protect known locations of specific minerals from sterilisation. MPAs must also define MCAs based on the safeguarding areas. In this case MSA and MCAs have been defined through the NM&WLP and MKMLP to protect mineral resources. The Scheme lies within a number of MSAs identified to protect sand and gravel and limestone resources.
- 11.8.4 The Scoping Opinion (Volume 3, Appendix 2.1) [EN010170/APP/GH6.3.2.1] notes that parts of the Scheme lie within or in close proximity to MSAs and MCAs. The Opinion states that it should be demonstrated that the Scheme does not impact on future ambitions for minerals extraction within the region. This assessment addresses this requirement, identifies how the Scheme is predicted to affect identified mineral resources and the significance of those effects.
- 11.8.5 The Scheme could possibly impact mineral resources and supply in three ways. Depending upon the level of disturbance the Scheme could:
- Disturb a mineral deposit to the extent the deposit becomes unviable to exploit;



- Impose a constraint on mineral extraction in the local vicinity by physically preventing its exploitation; and
- Adversely affect future local mineral supply.

- 11.8.6 In terms of the first point, potentially disturbing a mineral deposit to the extent it becomes unviable to exploit at some point, the only identified surface minerals the Scheme affects are sand and gravel deposits. On the basis that the Scheme does not require deep excavations and foundations are limited to galvanised steel poles driven into the ground or shallow strip foundations, disturbance would be limited to the surface layers rather than underlying deposits and the Scheme would not affect the long-term viability of working the identified sand and gravel resource.
- 11.8.7 In addition to raising mineral safeguarding issue, the Scheme has implications for allocated and operational quarries within Northamptonshire, thus there is a requirement to consider the impact of the Scheme on the future supply of minerals. The NM&WLP makes provision for 10 million tonnes of sand and gravel (equivalent to an annual average of 0.50 million tonnes) over the Plan period 2011 to 2031 to provide for an adequate supply of aggregates and maintain a landbank of seven years beyond the Plan period (i.e. up to 2038).
- 11.8.8 To achieve this, the spatial development strategy set out in the NM&WLP is to focus extraction in glacial and pre-glacial areas, and selected river valleys where there is currently or has been mineral extraction. In terms of river valley provision this includes the Nene Valley west of Wellingborough. The inclusion of parts of the Nene Valley supports the strategic approach of having locations for minerals that are closely related to existing and proposed development in particular growth at Northampton and Wellingborough. The Earls Barton West Extension (NM&WLP Policy 4, Site M4), is expected to provide the vast majority of the river valley supply. The majority of this allocation now has the benefit of planning permission (planning permission ref 17/00053/MINFUL). These permitted sand and gravel deposits are essential to maintaining aggregate supply within Northamptonshire and are key to the delivery of the NM&WLP objectives. At its closest this site lies 930m from the Cable Route Corridor and thus is outside the Study Area and unaffected by the Scheme.
- 11.8.9 In terms of glacial and pre-glacial deposits the area of focus for future mineral extraction is broadly based on an arc which extends east to west, south of the River Nene to the south of Northampton and Wellingborough and then turns north, to the southwest of the Northampton extending towards the County boundary to the south of Rugby and east of Daventry. Green Hill F lies within this area of focus and the NM&WLP Policy 4 Site M2 is allocated in accordance with this the area of focus.
- 11.8.10 North and West Northamptonshire Local Aggregates Assessment 2024 (Ref 11.9) reveals that average aggregate sales for sand and gravel for the most recent ten-year period (2014 – 2023) and three-year period (2021 – 2023), are 0.47 million tonnes per annum (Mtpa) and 0.46 Mtpa respectively. The NM&WLP sand and gravel provision rate of 0.50 Mtpa makes provision for sufficient reserves to maintain the required seven-year landbank. The landbank at the end of 2023 for Northamptonshire was eight years. The Scheme does have potential



to impact an existing permitted sites which contribute to the Northamptonshire sand and gravel landbank, the potential impact on these sites, Earls Barton Quarry and Earls Barton Spinney Quarry is discussed below under Green Hill C, D and E.

- 11.8.11 Beyond the Plan period the potential impact on mineral supply is more difficult to quantify. The Scheme is being proposed with a 60-year operational life. The current NM&WLP extends to 2031, although in effect by making provision to maintain a landbank of seven years beyond the Plan period, the NM&WLP identifies sufficient reserves to meet predicted sand and gravel requirements within Northamptonshire until 2038. During the proposed life of the Scheme, additional sand and gravel reserves will need to be identified to supply future needs. The NM&WLP already identifies glacial and pre-glacial deposits as potential sources of supply and an area of focus for future mineral extraction of these deposits. However, in Northamptonshire both MPAs have expressed the view that glacial and pre-glacial and gravel deposits have not proved to be particularly commercially attractive options as these deposits tend to be more variable in terms of depth and quality. It has also been suggested that future provision for sand and gravel supply may be less than the current average of 0.50 Mtpa.
- 11.8.12 In Milton Keynes, the MKMLP makes provision for sand and gravel production of 0.17 Mtpa. The Milton Keynes Local Aggregates Assessment 2023 (Ref 11.8) reveals that average aggregate sales for sand and gravel for the most recent ten-year period (2013 – 2022) and three-year period (2020 – 2022), are 0.154 Mtpa and 0.193 Mtpa respectively. Owing to only having one operational quarry and seeking to maintain commercial confidentiality the Local Aggregates Assessment cannot provide detailed figures on production or remaining mineral reserves however it does state that based on the MKMLP provision rate there are insufficient permitted reserves (as of 31/12/2022) to maintain a 7-year landbank, as required by national policy. To address this, three outstanding site allocations exist for sand and gravel extraction in the MKMLP which have the potential to increase the landbank. The Scheme has no impact on existing or allocated site in Milton Keynes.
- 11.8.13 The Scheme does affect several areas of safeguarded mineral reserves and areas identified to contribute towards future mineral supply. These have been dealt with in turn below.

*Green Hill A, A.2 and B*

- 11.8.14 The majority of both Green Hill A and A.2 together with the Cable Route Corridor connecting the two are within MSAs protecting sand and gravel resources. These are quite extensive deposits that potentially could be of economic interest being relatively unconstrained by surface development and in the case of Green Hill A.2 have a potentially suitable road access (the A43) to accommodate mineral related traffic. Green Hill B is also within 2 MSAs protecting sand and gravel resources, however in this case the area of the MSAs affected is more peripheral, with the MSAs extending beyond the Site, to the north and west and southwest. The first part of Cable Route Corridor connecting Green Hill B to the other sites is also within an MSA. There is no apparent evidence to suggest there has been



any significant recent or historic sand and gravel extraction within or in the vicinity of these sites nor the relevant section of the Cable Route Corridor. None are allocated for mineral extraction in the NM&WLP nor have been put forward for extraction. The three sites all lie outside the area of focus for future mineral extraction identified in the NM&WLP spatial strategy.

- 11.8.15 In the case of the development of Green Hill A, A.2 and B together with the interconnecting Cable Route Corridor the Scheme would inhibit exploitation of these mineral resources for the life of the Scheme. The impact is considered to be low impact resulting in a minor effect (not significant). All of these sites contain glacial sand and gravel deposits which West Northamptonshire Council have suggested are of less economic interest than fluvial deposits found elsewhere within Northamptonshire and have not generally been exploited to any significant extent. These are not deposits that form part of the area of focus for future mineral extraction identified in the NM&WLP spatial strategy and the temporary sterilisation of these deposits would not have an impact on mineral supply within Northamptonshire.
- 11.8.16 In terms of the Cable Route Corridor, the installation of cables has the potential to constrain future mineral extraction by bisecting mineral deposits and requiring stand-off areas either side thus creating operational issues for future mineral operations and restricting the most effective exploitation of the resource. In this case the embedded mitigation of, wherever possible and subject to other constraints, locating cable routes the edges of significant landscape features including hedges and woods means the impact is minimised.
- 11.8.17 The magnitude of impact of Green Hill A, A.2 and B plus the connecting Cable Route Corridors linking Green Hill A, A.2 and B is considered to be low and the significance of effect is considered to be minor effect (not significant for the purposes of the assessment).

Green Hill C, D and E

- 11.8.18 Green Hill C, D and E plus the connecting Cable Route Corridor linking Green Hill A.2, C, D and E do not affect any safeguarded mineral resources.
- 11.8.19 South of Earls Barton, the Cable Route Corridor linking Green Hill E to Green Hill BESS has to cross the River Nene. In doing so and avoiding the ecological interest to the south east of Earls Barton associated with flooded former sand and gravel workings, it extends into a large MSA protecting fluvial sand and gravel resources associated with River. This is one of the areas of focus for future mineral extraction identified in the NM&WLP spatial strategy. Within this MSA, the Cable Route Corridor potentially affects two separate permitted areas of mineral extraction, Earls Barton Quarry and Earls Barton Spinney Quarry. The provision of a cable route crossing any permitted sand and gravel site would inhibit the working of those deposits and prevent their exploitation during the NM&WLP period.
- 11.8.20 Earls Barton Quarry is long established quarry which is reaching the end of its life. The remaining mineral reserves however still contribute to the Northamptonshire sand and gravel landbank. Mineral extraction in this Quarry is due to be completed by August 2026 when planning permission for mineral



extraction expires. The Cable Route Corridor crosses the last phase of mineral extraction (phase 11b see Plan 8 drawing number E77/ 225 included in Appendix 1). This is a relatively small phase involving the removal of mineral under the internal haul road and soil storage area. Given the deadline to complete mineral extraction, which the Quarry owner indicated in discussions they expect to meet, it is anticipated that by the time any cable would need to be installed as part of the Scheme, the permitted mineral reserves within the Cable Route Corridor would have been extracted and removed. It is considered that the impact of the installation of cables on this Quarry is more significant in terms of final site restoration including infilling, than constraining mineral extraction.

- 11.8.21 Earls Barton Spinney Quarry lies to the north of the Earls Barton Quarry and straddles the River Nene. It is a permitted area of working which contributes to the Northamptonshire sand and gravel landbank. It is currently an operational quarry with mineral extraction taking place to the north of the River Nene. The next phase of working (consisting of Sub Phases 2a-2c) extends to the south of the River. Sub Phase 2a lies at the eastern end and working would progress westwards to Sub Phase 2c (see drawing number E18/03 included in Appendix 1).
- 11.8.22 The Cable Route Corridor includes all of the land within Sub Phase 2a of Spinney Quarry and the installation of cables in this location could effectively permanently sterilise these permitted reserves. During discussions with the quarry operator, they indicated their intention to commence operations in Phase 2 during 2025, starting in Sub Phase 2a. The permitted deposit is relatively shallow, around 2m, so working will progress laterally quickly across the Site and it is anticipated that working Phase 2 will take 2 years. Submitted planning application documents states that Phase 2 contains around 193,000 tonnes of sand and gravel and the anticipated extraction rate is given as 100,000 tonnes per annum. This would require the current planning permission, which requires mineral extraction to be completed by June 2026, to be amended to accommodate this. The original timescales for working this quarry have slipped following a period of inactivity and it has only recently been reopened by a new operator. . It is anticipated that by the time any cable would need to be installed as part of the Scheme, the permitted mineral reserves within the Cable Route Corridor may well have been extracted and removed. If this is case then the installation of the cable would not have any impact on mineral reserves although it could still have implications for the approved low level restoration scheme.
- 11.8.23 In the event, that mineral extraction within Spinney Quarry does not progress as anticipated there is sufficient flexibility within the Cable Route Corridor to route the cables around any permitted mineral reserves that have not been worked.
- 11.8.24 The magnitude of impact of Green Hill C, D and E plus the connecting Cable Route Corridors linking Green Hill A.2, C, D and E is considered to be negligible and therefore the significance of effect is negligible (not significant for the purposes of the assessment).
- 11.8.25 Until mineral extraction has been completed in Earls Barton Quarry and taken place in Phase 2 of Earls Barton Spinney Quarry the magnitude of impact of the Cable Route Corridor linking Green Hill E and Green Hill BESS is considered to





be medium and therefore the significance of effect is Major or Moderate (i.e. significant for the purposes of the assessment). Once mineral extraction has taken place the sensitivity of the mineral resource receptor would become low, the magnitude of impact would reduce to low and thus the significance of effect would be minor effect (not significant for the purposes of the assessment).

#### Green Hill BESS

- 11.8.26 The Green Hill BESS lies within the safeguarded Nene Valley deposits; however, it is not specifically allocated for future mineral extraction. Part of Green Hill BESS site to the northwest has recently been dug for sand and gravel, and since the mineral deposit has been removed, it is excluded from the MSA. There is also evidence to suggest the northern fringe of Green Hill BESS site has also been the subject of historic mineral extraction. The remainder of this Site is already heavily constrained by built development not least the existing Grendon Substation and thus the area of mineral deposits affected by the Scheme is relatively limited. Prior extraction of undeveloped parts of Green Hill BESS, to secure these mineral deposits is not considered to be a practical option given the relatively small and irregular shaped area, the potential amenity, ecological and access constraints that further restrict the area available and the fact the landform post extraction could become susceptible to flooding. The mineral reserves within Green Hill BESS would effectively be temporarily sterilised for the life of the Scheme, however this is not considered to represent a significant impact on mineral resources.
- 11.8.27 Green Hill BESS is also within various MCAs associated with the various permitted quarries. The BESS is not considered to be a sensitive land use in terms potential amenity impacts that arise from mineral working and the development of the BESS is not considered to impose additional constraints in terms of being able to continue to operate the permitted mineral extraction operations.
- 11.8.28 The magnitude of the impact is considered to be low and the significance of effect is considered to be minor effect (not significant for the purposes of the assessment).

#### Green Hill F

- 11.8.29 The northern part of Green Hill F is also within a sand and gravel MSA. This is also an area of proven economic sand and gravel deposits demonstrated by the recent extraction of now closed Bozeat Quarry. Green Hill F abuts the former quarry site on 3 sides. In addition, the NM&WLP allocates a new area for sand and gravel extraction under Policy 4 Site M2: Strixton – Bozeat, which abuts Green Hill F to the north. Although this mineral site has not been the subject of a planning application, the NM&WLP makes it clear that future mineral extraction in this location is dependent upon utilising the existing vehicular access connecting it to the existing A509 junction which was constructed to serve the previous workings. This access road lies within Green Hill F.
- 11.8.30 The development of Green Hill F has the potential to affect future mineral supply in two ways. First, whilst there is no direct overlap between the NM&WLP Policy 4 Site M2 allocation and Green Hill F, it does directly about the allocation. The



development of the Scheme could affect the exploitation of this deposit by imposing additional constraints on the working of the M2 allocation. To address this, the design of the Scheme retains at least a 30 m stand off between allocation and nearest solar panels, this includes a strip of tussocky grass and the retention and enhancement of boundary tree and hedge planting on the boundary of the Scheme. Second, the Scheme could impede access to the M2 allocation either through physical constraints or by limiting the amount of mineral related traffic that can use the existing A509 access. The Scheme layout retains the existing vehicular access across Green Hill F and does not involve traffic levels that would interfere with mineral related traffic. With this embedded mitigation the development of Green Hill F would not significantly impact the exploitation of the sand and gravel reserves within the M2 Allocation and thus should not have an adverse impact on mineral supply within Northamptonshire during the period of the NM&WLP.

- 11.8.31 Green Hill F is located within the area of focus for future mineral extraction exploiting glacial and pre-glacial sand and gravel deposits identified in the NM&WLP. The deposits are protected by the MSA and have already proved to be of economic value. The deposit already has a suitable access to the A509. It is therefore conceivable that the mineral reserve in the MSA could be considered as a potential source of sand and gravel over the next 60 years. The development of the Scheme would make these reserves unavailable during the life of the Scheme thus restricting the potential sources of supply of sand and gravel over that period. The significance of this impact is difficult to fully quantify given the future demand for sand and gravel is unknown, the quantity and quality of the sand and gravel deposit within the MSA are unknown and the fact there are other potential sources of supply within Northamptonshire. North Northamptonshire have suggested that the glacial sand and gravel deposits are generally of less economic interest than fluvial deposits found elsewhere within Northamptonshire.
- 11.8.32 The Cable Route Corridor running to the west of Green Hill F connecting two parts of the Site lies outside any safeguarded mineral deposits although there is an MSA to the west within 160m of the Cable Route Corridor and thus within the study area. The Cable Route Corridor is not considered to have any impact on these safeguarded mineral resources.
- 11.8.33 The magnitude of the impact of Green Hill F on mineral resources is considered to be low thus for safeguarded mineral deposits and the significance of effect is considered to be minor effect (not significant for the purposes of the assessment).
- 11.8.34 Taking account of the embedded mitigation and the significance of effect on the allocated mineral deposit to the north east of the Site is considered to be minor (**Not Significant** for the purposes of the assessment).

#### Green Hill G

- 11.8.35 Green Hill G covers a narrow area of safeguarded sand and gravel in the southern western corner. Although part of much larger MSA, within Green Hill G the potential exploitation of this reserve is already constrained by the A428 to the south and A509 to the west leaving the available deposit as a thin isolated strip which is unlikely to be of any practical economic value. In the southeastern corner, there is a second sand and gravel MSA. This is an isolated deposit of





sand and gravel which is partly within Green Hill G. The MSA extends beyond Green Hill G to the north and east. Although it may well contain an economic reserve of sand and gravel, working the deposit is constrained by the presence of overhead power cables, public rights of way and built development. Given the more extensive deposits of sand and gravel elsewhere in the locality it seems unlikely these mineral reserves would be required during the life of the Scheme.

- 11.8.36 Green Hill G is also with a MSA protecting limestone deposits, this affects the southern fringe of the Site adjacent to the A428 and the southeastern corner. This is the northern edge of the MSA which covers a large area that extends well to the south of the Green Hill G. Being on the periphery of the identified mineral deposit, the mineral contained within Green Hill G is likely to be a thinner and of poorer quality than elsewhere. There are extensive deposits of limestone elsewhere within Milton Keynes.
- 11.8.37 In the case of the development of Green Hill G, the Scheme would inhibit exploitation of these mineral resources for the life of the Scheme. The impact is not considered significant as the safeguarded sand and gravel deposits lie outside the preferred areas for extraction of sand and gravel resources within Milton Keynes identified in the MKMLP. The deposits of safeguard limestone within Green Hill G have the most significant potential for crushed rock production for aggregate uses. The MKMLP does not identify a specific production rate for limestone for aggregate purposes nor does it make any specific allocations for crushed rock. The temporary sterilisation of these deposits would not have an impact on aggregate supply within Milton Keynes.
- 11.8.38 The magnitude of the impact of Green Hill G on mineral resources is considered to be low and the significance of the effect is considered to be minor effect (not significant for the purposes of the assessment).
- 11.8.39 Approximately 470m of the Cable Route Corridor linking Green Hill G to Green Hill F extends along the fringe of a MSA protecting further glacial and pre-glacial sand and gravel resources. The embedded mitigation that wherever possible and subject to other constraints, cable routes are located along the edges of significant landscape features including hedges and woods mean that the impact of the Cable Route Corridor is minimised in this location.
- 11.8.40 The magnitude of the impact of the Cable Route Corridors connecting Green Hill G to Green Hill F to the BESS is considered to be low and therefore the significance of effect is Minor (not significant for the purposes of the assessment).

## **11.9 Additional Mitigation Measures**

- 11.9.1 Although it is likely all permitted mineral within the Cable Route Corridor will have been worked prior to the cable being installed, a number of other mitigation measures are incorporated into the Scheme to ensure that the permitted mineral reserves are not sterilised. These include as part of the detailed design working with the respective quarry operators to determine a route that only passes through worked parts of each quarry. Again working with the quarry operators seeking to extract any unworked mineral prior to or as part of the trenching associated with installation of the cable so that the mineral is not sterilised. Alternatively, if mineral extraction has not progressed as anticipated the Cable



Route Corridor is sufficiently wide at this point to allow the cable to be routed around the permitted quarry areas to completely avoid them.

### 11.10 Residual Effects

- 11.10.1 Until mineral extraction has been completed in Earls Barton Quarry and taken place south of the River Nene within Earls Barton Spinney Quarry the magnitude of impact of the Cable Route Corridor linking Green Hill E and Green Hill BESS is considered to be medium and therefore the significance of effect is **Major or Moderate**. On completion of mineral extraction the sensitivity of the mineral resource receptor would become low, the magnitude of impact would reduce to low and thus the significance of effect would be minor effect based on the Requirements of the extant planning permission relating to both quarries and on discussions with both quarry operators it is anticipated that mineral extraction will either have been completed or progress to a point where the cable can be installed within the Cable Route Corridor along a route where mineral extraction has already been completed.
- 11.10.2 Following the implementation of the appropriate site-specific mitigation measures identified during the decommissioning phases, the residual effects on mineral resources are determined to be negligible.
- 11.10.3 On completion of decommissioning phase, all surface development associated with the Scheme would have been removed and the underlying mineral resource would be available to be extracted if required. Any remaining below ground infrastructure, such as cabling ducts, would be removed as part of any mineral operations. This would be no different to removing other redundant subterranean infrastructure such as agricultural land drains.

### 11.11 Cumulative Effects

- 11.11.1 A list of cumulative projects can be found in Appendix 25.1 [EN010170/APP/GH6.3.25.1] of the ES. A summary of the likely significant cumulative effects will be listed within Chapter 25: Cumulative Effects and Effects Interaction [EN010170/APP/GH6.2.25] of this ES.

#### Cumulative effects

- 11.11.2 There are not considered to be any likely significant cumulative effects in conjunction with other developments.
- 11.11.3 Any other proposals for development that sterilise safeguarded mineral resources, particularly those allocated for future mineral extraction in the NM&WLP or MKMLP, could have an impact on the availability of sand and gravel in Northamptonshire or Milton Keynes. No other developments have been identified that affect permitted or allocated reserves. The total potential impact on safeguarded mineral reserves is considered small as this proposal only affects 0.6% of safeguarded sand and gravel reserves in Northamptonshire for a temporary period. In Milton Keynes the proportion of safeguarded mineral reserves affected is estimated at less than 0.1% for both sand and gravel and limestone again for a temporary period.



### In-combination effects

- 11.11.4 There are considered to be no in-combination effects from inter-topic relationships following respective mitigation that would cumulatively impact the Scheme.

## **11.12 Summary**

- 11.12.1 **Table 11.6** sets out a summary of the mineral resources environmental effects.


**Table 11.6: Summary of Residual Effects for Minerals**

Receptor	Description of Impact	Sensitivity of Receptor	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
<b>Construction/Operational/ Decommissioning Phases</b>							
Safeguarded sand and gravel resources within Green Hill A and Cable Route Corridor to Green Hill A2	Temporarily sterilised for the life of the Scheme	Medium	Low	Cable Route Corridor designed to follow the edge of significant landscape features or existing infrastructure corridors.  Decommissioning and removal of plant and structures to restore the baseline condition.	<b>Minor (Not Significant)</b>	None required	<b>Minor (Not Significant)</b>
Safeguarded sand and gravel resources within Green Hill A2	Temporarily sterilised for the life of the Scheme	Medium	Low	Decommissioning and removal of plant and structures to restore the baseline condition.	<b>Minor</b>	None required	<b>Minor (Not Significant)</b>



Receptor	Description of Impact	Sensitivity of Receptor	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Safeguarded sand and gravel resources within Green Hill B and Cable Route Corridor to Geen Hill C	Temporarily sterilised for the life of the Scheme	Medium	Low	Cable Route Corridor designed to follow the edge of significant landscape features or existing infrastructure corridors.  Decommissioning and removal of plant and structures to restore the baseline condition.	<b>Minor</b>	None required	<b>Minor (Not Significant)</b>
Safeguarded and permitted sand and gravel resources within Cable Route Corridor between Green Hill E	Temporarily sterilisation of permitted sand and gravel resources	High	Medium	South of Earls Barton Cable Route Corridor incorporates the flexibility to allow cables to be installed in areas already subject to mineral extraction or routed to avoid remaining	<b>Major or Moderate</b>	Lay cables in previously worked land/agree route to avoid permitted mineral reserves	<b>Minor</b>



Receptor	Description of Impact	Sensitivity of Receptor	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
and Green Hill BESS				permitted mineral reserves.  Decommissioning and removal of plant and structures to restore the baseline condition.			
Safeguarded sand and gravel resources within Green Hill BESS	Temporarily sterilised for the life of the Scheme	Medium	Low	Decommissioning and removal of plant and structures to restore the baseline condition.	<b>Minor</b>	None required	<b>Minor</b>
Allocated sand and gravel resources abutting Green Hill F	Inhibiting working the allocated mineral deposit for life of the Scheme	High	Medium	Retain existing vehicular access between the mineral extraction allocation (NM&WLP Policy 4 Site M2) and the A509 for the life of the Scheme/until the mineral has	<b>Minor</b>	None required	<b>Minor</b>





Receptor	Description of Impact	Sensitivity of Receptor	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
				<p>been worked and the Site restored.</p> <p>Retain 30 m stand off between mineral allocation and panels.</p> <p>Retain and enhance boundary tree and hedge planting.</p> <p>Decommissioning and removal of plant and structures to restore the baseline condition.</p>			
Safeguarded sand and gravel resources within and abutting Green Hill F and Cable Route Corridor between two	Temporarily sterilised for the life of the Scheme	Medium	Low	Decommissioning and removal of plant and structures to restore the baseline condition.	<b>Minor</b>	None required	<b>Minor</b>



Receptor	Description of Impact	Sensitivity of Receptor	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
parts of Green Hill F							
Safeguarded sand and gravel resources within Green Hill G and Cable Route Corridor to Geen Hill F	Temporarily sterilised for the life of the Scheme	Medium	Low	Cable Route Corridor designed to follow the edge of significant landscape features or existing infrastructure corridors.  Decommissioning and removal of plant and structures to restore the baseline condition.	<b>Minor</b>	None required	<b>Minor</b>
Safeguarded limestone resources within Green Hill G	Temporarily sterilised for the life of the Scheme	Medium	Low	Decommissioning and removal of plant and structures to restore the baseline condition.	<b>Minor</b>	None required	<b>Minor</b>



## References

- Ref 11.1 Green Hill Solar Farm (2024) Scoping Report. Available at: EN010170-000012-GHSF - Scoping Report.pdf
- Ref 11.2 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 <https://www.legislation.gov.uk/ukxi/2017/571/contents>
- Ref 11.3 Overarching National Policy Statement for Energy, Department for Energy Security & Net Zero, November 2023 <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>
- Ref 11.4 National Policy Statement for Renewable Energy Infrastructure, Department for Energy Security & Net Zero, November 2023 <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3>
- Ref 11.5 National Policy Statement for Electricity Networks Infrastructure Department for Energy Security & Net Zero, November 2023 [https://assets.publishing.service.gov.uk/media/669a25e9a3c2a28abb50d2b4/NPPF\\_December\\_2023.pdf](https://assets.publishing.service.gov.uk/media/669a25e9a3c2a28abb50d2b4/NPPF_December_2023.pdf)
- Ref 11.6 National Planning Policy Framework, Ministry of Housing, Communities & Local Government, December 2023. <https://www.gov.uk/guidance/minerals#minerals-overview>
- Ref 11.7 National Planning Practice Guidance Minerals Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government 17 October 2014
- Ref 11.8 Northamptonshire Minerals and Waste Local Plan Adopted July 2017, Northamptonshire County Council.
- Ref 11.9 Northamptonshire Minerals and Waste Local Plan Minerals and Waste Monitoring Report 2024, West and North Northamptonshire Councils
- Ref 11.10 The Milton Keynes Minerals Local Plan (July 2017).
- Ref 11.11 Milton Keynes Local Aggregates Assessment 2023, Milton Keynes City Council
- Ref 11.12 British Geological Survey, Mineral Safeguarding in England good practice advice (2011). British Geological Survey.
- Ref 11.13 Mineral Safeguarding Practice Guidance (Mineral Products Association & Planning Officers Society) April 2019
- Ref 11.14 British Geological Survey. 2000. Mineral Resource Information in support of National, Regional and Local Planning: Northamptonshire. British Geological Survey Commissioned Report. (Funded by the Department of the Environment, Transport and the Regions)
- Ref 11.15 Benham A.J. and 8 others. 2003. Mineral Resource Information in support of National, Regional and Local Planning: Buckinghamshire (comprising Buckinghamshire and Milton Keynes). British Geological Survey Commissioned Report. (Funded by the Office of the Deputy Prime Minister)



Ref 11.16

