

The Great Grid Upgrade

North Humber to High Marnham

Preliminary Environmental Information Report

**Volume 3: Appendix 12.2 Preliminary Qualitative
Minerals Resource Assessment**

February 2025



nationalgrid

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North Humber to High Marnham

Document control

Document Properties

Organisation	Stantec UK Limited
Author	Stantec UK Limited
Approved by	National Grid
Title	Preliminary Environmental Information Report Appendix 12.2 Preliminary Qualitative Minerals Resource Assessment
Document Register ID	NHHM-NG-ENV-REP-001
Data Classification	Public

Version History

Document	Version	Status	Description / Changes
Appendix 12.2	1.0	Final	First Issue

1. Introduction

- 1.1.1 This Preliminary qualitative Minerals Resource Assessment (MRA) has been produced to inform **Chapter 12 Geology and Hydrogeology** and **Chapter 20 Substations and Associated Works** of the Preliminary Environmental Information Report (PEIR) for the Project. This appendix has been prepared to provide baseline information on minerals present within the study area and identify the potential effects of the Project on Mineral Safeguarding Areas (MSA) and/or Mineral Consultation Areas (MCA) with the purpose of establishing the potential impact on mineral resources of economic importance and to consider whether further consideration and mitigation is required.
- 1.1.2 As described in **Chapter 12 Geology and Hydrogeology**, the study area for geology comprises the draft Order Limits plus a 250 m buffer.
- 1.1.3 This MRA has been written with regard to Minerals Safeguarding Practice Guidance (Ref 12.2.1) which provides guidance on the scope and format of the MRA.
- 1.1.4 For ease of reference the Project has been split into 11 Route Sections and are described in **Chapter 4 Description of the Project**. The need for the Project is set out in **Chapter 1 Introduction** and **Chapter Project Need and Alternatives**.

2. Minerals Policy and Planning

2.1 National Policy Statements

- 2.1.1 As described in **Chapter 2 Regulatory and Planning Policy Context**, when examining an application for development consent, the Planning Inspectorate is required to have regard for the relevant National Policy Statements (NPS). The two relevant NPS for the Proposed Project are the Overarching NPS for Energy (EN-1) (Ref 12.2.2) and the NPS for Electricity Networks Infrastructure (EN-5) (Ref 12.2.3).
- 2.1.2 Paragraph 5.11.19 of 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*'.
- 2.1.3 Paragraph 5.11.28 states '*Where a proposed development has an impact upon a Mineral Safeguarding Area, the Secretary of State should ensure that appropriate mitigation measures have been put in place to safeguard mineral resources*'.
- 2.1.4 Although the relevant NPS provide the primary policy against which the application should be determined, regional and local policy documents may also be considered important and relevant to decision-making. Therefore, the relevant minerals plans have been considered when developing this MRA.

2.2 National Planning Policy Framework

- 2.2.1 The National Planning Policy Framework (NPPF) (Ref 12.2.4) paragraphs 215 to 223 describe how planning policies should facilitate the sustainable use of minerals.
- 2.2.2 Paragraph 216 states that '*Planning policies should:*
- c) Safeguard mineral resources by defining Mineral Safeguarding Areas and Mineral Consultation Areas; and adopt appropriate policies so that known locations of specific mineral 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 resource defined will be worked);*
 - d) set out policies to encourage the prior extraction of minerals, where practical and environmentally feasible, if it is necessary for non-mineral development to take place*
- 2.2.3 The NPPF also states in paragraph 219 that '*Minerals planning authorities should plan for a steady and adequate supply of aggregates by: ...*
- f) maintaining landbanks of at least 7 years for sand and gravel ... whilst ensuring that the capacity of operations to supply a wide range of materials is not compromised*".
- 2.2.4 The Minerals Planning Practice Guidance (Ref 12.2.1) states in paragraph 002 that '*since minerals are a non-renewable resource, minerals safeguarding is the process of ensuring that non-minerals development does not needlessly prevent the future extraction of mineral resources, of local and national importance*'.

2.3 Local Planning Policy

East Riding of Yorkshire and Kingston upon Hull Joint Minerals Local Plan

- 2.3.1 The East Riding of Yorkshire and Kingston upon Hull Joint Minerals Local Plan (Ref 12.2.5) covers Route Sections 1 to 4 of the Project and indicates that large parts of the study area are located within an MSA.
- 2.3.2 The area around Broomfleet is identified in the Joint Minerals Local Plan as being within a safeguarded area for brick clay and includes the main site for brick clay extraction within the plan area. The Wienerberger Ltd clay works at Broomfleet Tile Works is located within the study area and is a current consented extraction site which has planning permission to extract mineral (clay) for the next 50 years. The site has been worked for over 100 years and is used in the manufacture of a range of roofing tiles and bricks.
- 2.3.3 There are no other consented extraction sites, site allocations or proposed allocation sites within the study area.
- 2.3.4 Policy EC6: Protecting mineral resources of the East Riding Local Plan Strategy Document (Ref 12.2.6) that forms part of the Joint Minerals Local Plan (Ref 12.2.5) states that *'within or adjacent to Minerals Safeguarding Areas non minerals development, which would adversely affect the viability of exploiting the underlying or adjacent deposit in the future, will only be supported where it can be demonstrated that the:*
- i. Underlying or adjacent mineral is of limited economic value;*
 - ii. Need for the development outweighs the need to safeguard the mineral deposit;*
 - iii. Non-mineral development can take place without preventing the mineral resource from being extracted in the future;*
 - iv. Non-mineral development is temporary in nature; or*
 - v. The underlying or adjacent mineral deposit can be extracted prior to the non-mineral development proceeding, or prior extraction of the deposit is not possible.'*

North Lincolnshire Local Development Framework

- 2.3.5 The North Lincolnshire Local Development Framework (LDF) Core Strategy (Ref 12.2.7) and the corresponding interactive policy map (Ref 12.2.8) covers Route Sections 5 to 8 of the Project; this indicates that much of the study area within North Lincolnshire is located within an MSA for sand and gravel. The southern part of the study area within North Lincolnshire (Route Sections 6 and 7) also includes a MSA for brick clay. However, there are no existing consented extraction sites, site allocations or proposed allocation sites within the study area.
- 2.3.6 Policy CS21: Minerals of the Core Strategy (Ref 12.2.7) states that *'Major developments in the Mineral Safeguarding Areas will only be permitted where it has been demonstrated that:*
- a) the mineral is no longer of any value, or*

- b) the mineral can be extracted prior to the development taking place, or
- c) the development will not inhibit extraction if required in the future, or
- d) there is an overriding need for the development and prior extraction cannot be reasonably undertaken, or
- e) the development is allocated in a local development plan document, or
- f) the development is not incompatible.'

Nottinghamshire Minerals Local Plan

- 2.3.7 The Nottinghamshire Minerals Local Plan (Ref 12.2.9) covers Route Sections 8 to 11 and (Ref 12.2.9) indicates that the majority of the study area within Nottinghamshire is not within a MSA and does not intersect any minerals development or infrastructure. The exception to this is within the northern most part of this Local Plan area in the southern part of Route Section 8 and in parts of Route Section 10 (Option 3) which are within a MSA for sands and gravels.
- 2.3.8 Policy SP7: Minerals Safeguarding, Consultation Areas and Associated Minerals Infrastructure of the Minerals Local Plan states that:
2. *'Non-minerals development within minerals safeguarding areas will have to demonstrate that mineral resources will not be needlessly sterilised as a result of the development and that the development would not pose a serious hindrance to future extraction in the vicinity.'*
 3. *'Where this cannot be demonstrated, and where there is a clear and demonstrable need for the non-minerals development, prior extraction will be sought where practicable.'*

2.4 Local Aggregate Assessments

Humber Area Local Aggregate Assessment

- 2.4.1 The current landbank for various aggregates for any given Minerals Planning Authority (MPA) is usually documented in a Local Aggregate Assessment (LAA), which reports annually (generally) on aggregate supply and demand within the relevant planning area. The Humber Area Local Aggregate Assessment (Ref 12.2.10) covers the Route Sections of the study area that are within the East Riding of Yorkshire, and also North Lincolnshire; with the most recent LAA currently available for these Route Sections reflecting the position at the end of 2021.
- 2.4.2 The LAA contains the following information in relation to sand and gravel:
- **Sand and gravel sales:** The average aggregate sales for sand and gravel for the most recent ten-year rolling period (2012 to 2021), and three-year rolling period (2019 to 2021), are 0.85 million tonnes per annum (mtpa) and 0.83 mtpa respectively. The sales have been noted to be broadly consistent over the last 10 years.
 - **Sand and gravel landbank:** Reserves (as of 31 December 2021) were 6.53 million tonnes which is a decrease from the 7.32 million tonnes recorded in the 2018 assessment. Based on the average sales for the most recent ten-year rolling period, the landbank currently stands at 7.7 years which is a decrease from the previous LAA in 2018. This is, however, in excess of the seven-year minimum requirement

set out in the NPPF (Ref 12.2.4) and policy CS21 of the Core Strategy in the LDF (Ref 12.2.7).

- **Extraction sites:** At the time the LAA was produced, there were 10 active sites extracting sand and gravel, with a further 5 sites which were dormant or inactive; however, none of these are located within the study area.

2.4.3 The evidence from the LAA indicates that there is no current or foreseeable shortage of sand and gravel reserves in the Humber area.

Nottinghamshire and Nottingham Local Aggregates Assessment

2.4.4 The Nottinghamshire and Nottingham LAA (Ref 12.2.11) covers the Bassetlaw section of the study area, with the most recent LAA reflecting the position at the end of 2022. The LAA contains the following relevant information:

- **Sand and gravel sales:** The 10-year average sales figure (2013-2022) was 1.35 million tonnes (mt) which has steadily fallen since the first LAA was produced. The three-year annual sales average (2020-2022) was 1.18 mt and has also slowly fallen.
- **Sand and gravel landbank:** The current permitted reserves total 20.52 mt of sand and gravel, therefore as of December 2022 the landbank stood at 15.2 years which is in excess of the seven-year minimum requirement set out in the NPPF. It is also noted that the landbank has been steadily increasing due to a significant extension being granted to one of the permitted quarries and as the 10-year sales average has also been decreasing.
- **Extraction sites:** There are currently eight permitted sand and gravel quarries in the region, with only six of those in full production however none of these are located within the study area.

2.4.5 The evidence from the LAA suggests that the demand for sands and gravels has been decreasing and therefore the landbank of permitted reserves is slowly increasing. It is therefore considered that there is no current or foreseeable shortage of sand and gravel in the Nottinghamshire and Nottingham area, and that the existing landbank is adequate.

3. Existing Baseline

3.1 Minerals Composition and Thickness

- 3.1.1 The geology in the study area is shown on **Figure 12.1 Superficial Geology** and **Figure 12.2 Bedrock Geology**. And discussed within **Chapter 12 Geology and Hydrogeology** and **Appendix 12.1 Preliminary Contamination Risk Assessment** of the PEIR.

3.2 Mineral Assessment Reports

- 3.2.1 The Minerals Assessment Reports (MARs) are a series of reports that describe the mineral resources across areas of the United Kingdom. The reports were produced using data gathered from borehole surveys and contain qualitative and quantitative data on lithology, composition, particle size analysis and other information of commercial value.
- 3.2.2 There are two relevant MARs which cover the northern part of North Lincolnshire (Route Sections 5 and 6), and both the southern part of North Lincolnshire and the northern part of the Bassetlaw section (Route Sections 8 and 9).

Minerals Assessment Report 22

- 3.2.3 MAR 22 (Ref 12.2.12) covers the northern part of the North Lincolnshire section (Route Sections 5 and 6). The MAR subdivides the area covered into resource blocks where the mineral is then sub divided into areas where it is exposed and areas where it is present beneath overburden.
- 3.2.4 The study area crosses through resource blocks A, B, C and D which are all described as being in area where there is “*continuous or almost continuous spreads of mineral beneath overburden*” with the overburden ranging from 7m in resource block A in the north of the section, to 1.5 m in the southern part of the MAR area in resource block D, south of Eastoft. A review of the descriptions of each resource block indicates that there is the potential for workable mineral to be present, based on the boreholes reviewed by the MAR; however, it is often confined by substantial thicknesses of overburden.

Minerals Assessment Report 43

- 3.2.5 MAR 43 (Ref 12.2.13) covers the northern part of the Bassetlaw section (Route Sections 8 and 9). The study area crosses resource blocks C and D within the northern part of the section and then crosses into an area to the south of the resource blocks which is described as “*sand and gravel either not potentially workable or absent*”.
- 3.2.6 Resource block C was described as mineral bearing; however, sand and gravel was not encountered in some boreholes and the thickness of the mineral where encountered was found to be variable with overburden of sandy soil up to 1.5 m thick.
- 3.2.7 Resource block D was also described as mineral bearing, and the thickness of the mineral varies from 1.8 m to 9.4 m. The mineral is noted to be entirely covered by a thin layer of alluvial clays and silts.

Summary

- 3.2.8 The MARs only cover a very small part of the study area, with MAR 43 showing that the majority of the study area covered by that report is within an area where the mineral is absent, which is consistent with the minerals local plan for the area.
- 3.2.9 The reports show that mineral is likely to be present in parts of the route; however, it is also likely to be covered by a thick layer of overburden in North Lincolnshire (Route Sections 5 and 6). In the north of the Bassetlaw section, the route only crosses a very small area of potentially extractable mineral within Route Section 8.

4. Assessment

4.1 Effects of the Project on Safeguarded Extents

- 4.1.1 The policies maps accompanying the relevant minerals plans indicate that much of the draft Order Limits are located within safeguarded areas – predominantly for sands and gravels and brick clay. However, the draft Order Limits are the extents of the Project covering the entire working area and does not therefore represent the potential area where mineral may be sterilised. The actual physical footprint of the operational Project components is a relatively small proportion of the draft Order Limits.
- 4.1.2 There are no proposed sections or undergrounding, however some of the third party services that are crossed by the Proposed Overhead line, including low voltage electricity and telecommunication lines are proposed to be undergrounded. The Proposed Overhead Line, comprising pylons, spaced generally between approximately 350 m to 450 m apart, and the conductors which span between the pylons. The conductors would not result in sterilisation of minerals, as minerals could be extracted from beneath the overhead line, following suitable assessment and consultation with National Grid. Therefore, potential areas of sterilisation of the minerals relates only to the pylon bases and any operational clearance required.
- 4.1.3 In addition, based on the information from the MRAs and the published geology of the area, the foundations of pylon bases along at least part of the route are likely to be entirely or almost entirely within overburden material that is present to relatively significant depth over any mineral present.
- 4.1.4 This infrastructure is also generally considered to be temporary, as although during the operational lifetime of the Project the areas of mineral could not be feasibly extracted (beneath the built elements such as pylon bases), once decommissioned, the infrastructure could be removed and access to the underlying mineral restored.

4.2 Effects of the Project on Existing Minerals Infrastructure

- 4.2.1 The Broomfleet Tile Works, is located within the study area. However, whilst the Proposed Overhead Line may have some impact on the existing/proposed activities at the site, National Grid will engage with the minerals operator to agree mitigation for any potential impacts on the site operations.

4.3 Engineering and Construction Considerations

- 4.3.1 Prior extraction refers to the removal of a mineral resource, to prevent sterilisation, prior to the commencement of construction works on a project. Incidental extraction refers to the removal of a mineral resource during the construction of a project.
- 4.3.2 In this case, incidental extraction is not considered feasible due to a variety of reasons but including the likely engineering requirements needed following mineral extraction, to create an appropriate development platform for the Project, which would have a significant negative impact on the construction programme. In some locations, where the pylons are likely to be founded within non mineral overburden, incidental extraction

of the mineral would require over deepening and additional excavation that would also result in additional engineering to create a suitable development platform for the Project. The additional excavations and engineering would result in additional Project costs and programme delays.

- 4.3.3 Any prior extraction at pylon bases is likely to produce a small quantity of mineral and would also need to include an area significantly larger than both the proposed pylon bases and any excavations proposed to facilitate their construction (for reasons of practicality and stability). The mineral would then have to be replaced by appropriate material which would likely need to be engineered to meet any specific geotechnical design requirements for the pylon bases. This is likely to require significant additional cost to over excavate, replace with imported material, engineer the material and to provide the suitable stability assessments and specifications required to demonstrate/facilitate short and long term stability of the excavations and the pylons. The potential environmental impacts (noise, dust, traffic, landscape and visual) of prior extraction are likely to require environmental assessment/consideration due to their cumulative scale.
- 4.3.4 It has been considered whether National Grid could replace the excavated mineral with inert waste as a recovery operation, in order to reduce the potential costs associated with prior/incidental extraction; however, this is unlikely to be practical in the context of the discrete relatively small areas and would require additional designs and engineering to fully understand the design implications.
- 4.3.5 In addition, the use of inert waste would require separate additional applications to be made to the Environment Agency for environmental permits (for a waste recovery activity) including supporting risk assessments such as hydrogeological risk assessments and stability risk assessments. This is likely to result in both additional cost and delay to the programme affecting both National Grid's duty to be economic and efficient, and put at risk meeting the proposed operation date. The potential environmental impacts of using inert waste could also be significant and may require environmental assessment and planning permission in their own right.
- 4.3.6 It is considered that due to the long relatively narrow corridor that will comprise the Order Limits, and with extraction only considered at pylon bases, this would limit the potential (from a cost and practical perspective) for either prior or incidental extraction in the context of the relatively low volume of mineral likely to be extracted. This is before consideration of the quality and value of the mineral (which may further reduce the volume of quality economic mineral). The cumulative costs of extraction of the mineral, the transport of the mineral to an off-site facility for processing and the subsequent infilling of the void (either with inert waste or engineered fill), together with the potential environmental implications and geotechnical engineering enhancement needed to provide an appropriate material on which to construct the Project is considered to significantly outweigh the economic value of the extracted mineral.

5. Conclusion

- 5.1.1 National Grid acknowledges that large parts of the study area are located within an MSA, which also extend beyond the study area, across substantial areas of the East Riding of Yorkshire, North Lincolnshire and Nottinghamshire, and that the draft Order Limits pass through the Broomfleet Tile Works. Even if the full extent of the draft Order Limits within an MSA were to sterilise mineral of sufficient quality and extent to be economically valuable, the extent of the sterilised area is very small in comparison to the extent of the MSA. Therefore, in the context that only a relatively small proportion of the overall draft Order Limits will sterilise potential mineral resource, the quantity of mineral that could be sterilised by the Project is considered to be insignificant in the context of the extensive occurrence of the minerals (predominantly sand and gravel) within the counties and the national need/significance of the Project.
- 5.1.2 In addition, whilst there are mineral deposits safeguarded within the study area, the existence, extent and quality of such is not proven and is anticipated to be highly variable. Therefore, not all of the safeguarded areas may contain mineral, or mineral of sufficient quality or economical value.
- 5.1.3 The Wienerberger Ltd extraction site for brick clay is also located within the study area and National Grid will engage with the mineral operator to discuss potential mitigation if appropriate.
- 5.1.4 Consideration has been given to prior extraction of minerals as part of the Project. This has shown that there are likely to be only small discrete areas of the Project where material could be excavated due to the linear nature of the Proposed Overhead Line, making it impractical. This has also shown that the increase in cost associated with the extraction would increase the overall cost of the entire Project and would conflict with National Grid's duty to be economic and efficient.
- 5.1.5 In addition, the additional time that would need to be added to the construction schedule would mean that National Grid could miss the Project's intended delivery date, which could also risk the meeting of the Government target of a net-zero electricity system by 2030. Therefore, it is considered that in the context of the additional cost and time required, prior/incidental extraction of mineral is not viable.
- 5.1.6 The NPS (Ref 12.2.2) requires that developments should safeguard minerals as far as possible and in consideration of the land use following decommissioning. Whilst it is acknowledged that some temporary sterilisation of some small areas of minerals resources may occur associated with the Project, these resources will be available following decommissioning of the Project.
- 5.1.7 The NPPF (Ref 12.2.4) encourages prior extraction of minerals '*where practical and feasible*', and this MRA indicates that this requirement is not met on the Project as it would not be practical to extract the mineral prior to development.
- 5.1.8 The Project is considered to be of national significance, and therefore the need for the Project '*outweighs the need to safeguard the mineral deposit*' which is one of the statements within Policy EC6 of the East Riding of Yorkshire and Kingston upon Hull, Joint Minerals Local Plan (Ref 12.2.5) and therefore the Project complies with this policy. Policy CS32 of the North Lincolnshire Local Development Plan (Ref 12.2.7) states that where '*there is an overriding need for the development and prior extraction*

cannot be reasonably undertaken' major development can be permitted in a MSA, and it is considered that the Project complies with this policy.

- 5.1.9 In addition, the Project complies with Policy SP7 of the Nottinghamshire Minerals Local Plan (Ref 12.2.9), specifically '*...where there is a clear and demonstrable need for the non-minerals development*'.
- 5.1.10 Based on the national significance of the Project and that all affected authorities have more than the seven-year land bank of sand and gravel, as required by the NPPF (Ref 12.2.4), and sufficient additional safeguarded areas, it is considered that the potential impact of sterilising the small volume associated with the Project is acceptable without further consideration or mitigation.

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National Grid plc
National Grid House,
Warwick Technology Park,
Gallows Hill, Warwick.
CV34 6DA United Kingdom

Registered in England and Wales
No. 4031152
nationalgrid.com