Great North Road Solar and Biodiversity Park

Environmental Statement

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Technical Appendix A10.9 – Mineral Resource Assessment

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Contents

A10.9.1 INTRODUCTION

A10.9.1.1 PREAMBLE

1 RPS Consulting Services Ltd (RPS) was commissioned by Elements Green Trent Ltd to produce a Mineral Resource Assessment (MRA) of The Great North Road Solar and Biodiversity Park (GNR; "the Development") within the Order Limits.

2 The Development would be located to the north-west of Newark, in the Newark and Sherwood district, Nottinghamshire, East Midlands. The Development would be within an area bound by the Order Limits. The Order Limits are to the west of the A1, north of the A617, east of Eakring, and south of Egmanton, to the north and north-west of Staythorpe. The Development essentially consists of discrete land parcels proposed to be occupied by solar PV panels, BESS and associated infrastructure, and connected by cable route areas. The eastern side of the Development runs from the north of Norwell to Egmanton in the north (with additional parcels of land for mitigation/enhancement around North Muskham). The western side of the Development runs north-west from Staythorpe Power Station and then splits at Maplebeck, with spurs running to Eakring in the north-west and Kneesall to the north-north-east, then connecting with the eastern side of the Development.

3 Following the initial EIA scoping consultation, Nottinghamshire County Council (NCC) identified a requirement for a MRA to support the application.

4 This report presents the MRA information for the Development within the Order Limits. For ease of assessment, the Order Limits has been subdivided by RPS into eight study areas (referenced as Study Areas 1 – 8) and the Study Areas are shown on Figure 10.1: Site Desk Study Zoning Plan. It should be noted that the Study Areas are based on previous Order Limits and therefore the Study Areas are larger than and inclusive of the current Order Limits; the latter of which is also presented in the figure.

5 Cable routes are not considered to present significant sterilisation of mineral resources along localised shallow cable routes and are therefore excluded from the assessment presented. It should also be noted that a number of the cable routes are proposed along existing public highways.

6 The MRA is based upon a review of published information available from local, regional, and national agencies.

A10.9.1.2 RESOURCES ACROSS THE ORDER LIMITS

7 The extent of the Mineral Safeguarding Areas (MSA) in Figure A10.9.1: Mineral Safeguarding Areas. Study Areas 1-6 and 8 fall within designated Mineral Safeguarding Areas (MSAs) in accordance with the NCC Minerals

Local Plan[1] (MLP) (adopted March 2021) for Sand and Gravel and Brick Clay.

A10.9.1.3 REPORT STRUCTURE

- Section A10.9.2: General Approach – Provides a summary of the general approach adopted to deliver the agreed scope of works including a summary of all key data sources used in the MRA.
- Section A10.9.3: Review of Mineral Planning Policy – Provides a summary of the National, Regional and Local planning policy context in relation to minerals. It also provides commentary on any supplementary planning documents relating to minerals.
- Section A10.9.4: Study Areas' Setting – Provides a summary of key aspects of the affected Study Areas' setting, including a description of the geological and hydrogeological context for the assessment. This section describes the mineral designations relevant to the affected Study Areas.
- Section A10.9.5: Mineral Infrastructure Assessment – Provides the mineral infrastructure assessment with respect to the potential impact of the Development within the affected Study Areas to proximal mineral extraction activities and existing mineral sites on the Development.
- Section A10.9.6: Mineral Resource Assessment – Provides the mineral resource assessment for the Study Areas and likely constraints on mineral extraction and an evaluation against mineral planning policies.
- Section A10.9.7: Summary and Conclusions – Summary of mineral resource assessment and evaluation of potential constraints for development resulting from criteria outlined in planning context applicable to the Study Areas.

[1] Nottinghamshire County Council (2021). Nottinghamshire Minerals Local Plan Adopted 2021. Available at: https://www.nottinghamshire.gov.uk/planning-and-environment/minerals-local-plan/adopted-minerals-local-plan (accessed on 21.05.2025).

A10.9.2 GENERAL APPROACH

8 This MRA utilises available published geological and site setting information to evaluate the constraint that mineral resources, present beneath the affected Study Areas, are likely to place on the Development given local mineral planning policy. The MRA provides a resource assessment that defines the extent of viable (extractable) mineral resources present beneath the affected Study Areas, principally in relation to designated MSAs and Mineral Consultation Areas (MCAs) defined by the Mineral Planning Authority (MPA) of NCC. The available mineral resource is then evaluated against the mineral planning policy for the affected Study Areas, with the viability and practicability of extraction and practicability of prior extraction of the safeguarded resources considered.

A10.9.2.1 DATA SOURCES

9 The geological setting of the affected Study Areas has been determined from a review of publicly available data sources that include:

- BGS Geoindex Onshore 1:50,000-scale mapping and borehole records; and
- BGS Mineral Assessment Report Series, Ref NR031 (Institute of Geological Sciences): The Sand and Gravel resources of the country west of Newark upon Trent, Nottinghamshire.

10 In addition to material published by the BGS, the following mineral planning documentation produced by the MPA at NCC has been reviewed. This includes:

- Nottinghamshire Minerals Local Plan (March 2021); and
- Nottinghamshire and Nottingham Local Aggregates Assessment (LAA) (October 2024).

11 Although no site-specific ground investigations have been made available to RPS for the assessment, a review of historical borehole logs available on BGS Geoindex Onshore, indicates there are several boreholes located within or in close proximity to the Study Areas falling within MSAs. Where necessary, reference is made throughout to the available BGS borehole records in relation to description of site-specific geology.

12 The general environmental setting has been obtained from publicly available data sources including:

- Defra Magic Maps (geology, hydrogeology, and environmental sensitivity);
- Ordnance Survey mapping and:
- Aerial photography.

A10.9.3 REVIEW OF MINERAL PLANNING POLICY

A10.9.3.1 MINERAL PLANNING CONTEXT

13 For England, the key national planning policies for minerals are set out in the National Planning Policy Framework (NPPF)[2], updated in February 2025. The focus of the NPPF is a presumption in favour of sustainable development. The NPPF recognises that minerals are essential to support sustainable economic growth and our quality of life. It is therefore important that there is a sufficient supply of material to provide the infrastructure, buildings, energy, and goods that the country needs whilst ensuring that permitted mineral operations do not have unacceptable adverse impacts on the natural and historic environment or human health. The NPPF also recognises that, since minerals are a finite natural resource, and can only be worked where they are found, it is important to make the best use of them and to secure their long-term conservation through the mechanism of mineral safeguarding.

14 In the context of local planning, the Study Areas affected by MSAs fall within the Newark and Sherwood District Council (NSDC) Local Authority area. NSDC lies within administrative area of NCC which oversees all mineral and waste matters within the county. The principal document and policies relating to strategic mineral planning within NCC are as follows:

- Nottinghamshire County Council Minerals Local Plan (adopted March 2021); and
- Nottinghamshire and Nottingham Local Aggregates Assessment (LAA) (October 2024.

A10.9.3.2 NOTTINGHAMSHIRE COUNTY COUNCIL MINERALS LOCAL PLAN (ADOPTED MARCH 2021)

15 The Nottinghamshire Minerals Local Plan[3] (MLP) was adopted in 2021 to cover the period up to 2036 and therefore represents the relevant current mineral policies in relation to mineral resources and mineral safeguarding across the Development Site. The key mineral policy that underpins the needless sterilisation of mineral resources is **Policy SP7**: Minerals Safeguarding, Consultation Areas and Associated Minerals Infrastructure.

16 **Policy SP7** states:

"***Minerals Safeguarding Areas***

1. *Locally and nationally important mineral resources, permitted reserves, allocated sites and associated minerals infrastructure will be safeguarded from needless sterilisation by non-minerals development through the*

[2] Ministry of Housing, Communities and Local Government, National Planning Policy Framework (Amended Feb 2025) Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf (accessed 21.05.25)
[3] Nottinghamshire County Council (2021). Nottinghamshire Minerals Local Plan Adopted 2021. Available at: https://www.nottinghamshire.gov.uk/planning-and-environment/minerals-local-plan/adopted-minerals-local-plan (accessed on 21.05.2025).

designation of minerals safeguarding areas as identified on the Policies Map.

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."*

17 Policy SP7 seeks to ensure that appropriate weight is accorded to the prior extraction of minerals which would otherwise be sterilised by built / non-mineral development. The above measures outlined in Policy SP7 will be used to assess against as part of this MRA.

18 Under Policy SP7, NCC state that "not every non-mineral development proposal within or close to a Minerals Safeguarding and Consultation Areas represents a risk to future minerals extraction" and list a number of development categories that are considered exempt from both consultation and safeguarding:

- Development which is in accordance with adopted District/Borough Local Plan allocations which took account of minerals sterilisation and where prior extraction is not feasible or appropriate;
- Temporary development;
- Householder planning applications (except for new dwellings);
- All applications for advertisements;
- Infill development;
- Reserved Matters; and
- Prior notifications (telecoms, forestry, agriculture, demolition).

19 In general, solar park developments are considered to be temporary development, with lifespans typically ranging between 40 and 50 years before the land is returned to its original state. With respect to The Development, the estimated operational life of the solar park is 40 years. In line with the MLP, there is no defining time period that NCC consider as 'temporary' and therefore the park falls under the development category of temporary development.

20 In addition, Policies MP1 (Aggregate Provision) and MP6 (Brick Clay Provision) identify a number of existing permitted and new sites for both safeguarded resources that would maintain the required minimum landbank over the Plan period and are therefore not currently exploring new potential sites for mineral extraction.

A10.9.4 DEVELOPMENT SITE SETTING

A10.9.4.1 GENERAL SETTING

21 The affected Study Areas, that include the Order Limits, predominantly comprise agricultural fields. The wider setting is also predominantly rural land with a number of dispersed farms, towns and villages.

A10.9.4.2 GEOLOGICAL SETTING

A10.9.4.2.1 Regional Geology

22 The regional geological setting for the Study Areas, as determined from publicly available data sources of the BGS[4] is summarised in Table A10.9.1 below and is provided as Figure A10.9.2: Extracts from BGS Geoindex 1:50,000 mapping.

Table A.10.9.1 – Regional Geology

Strata	Description	Approximate Thickness (m)
Alluvium	Typically comprises clay, silt, sand and gravel.	-
Holme Pierrepont Sand and Gravel Member (River Terrace Deposits)	Typically pinkish, poorly sorted and compositionally immature Sands and Gravels	Up to 12
Glaciofluvial Deposits	Typically comprises sand and gravel	-
Glacial Till Deposits	Typically comprises sand and gravel within a clay and silt matrix	-
Mercia Mudstone (Keuper Marl)	Typically comprises red mudstones and subordinate siltstones.	Up to 1350

23 It is anticipated that sand and gravel deposits are present beneath the Alluvium, and where no superficial cover is indicated, are likely areas where the bedrock is outcropping / very shallow.

A10.9.4.3 SAFEGUARDED MINERAL RESOURCE

24 The superficial Sand and Gravel deposits of the Holme Pierrepont Member and bedrock of the Mercia Mudstone Group are considered to constitute the safeguarded mineral resources present on the Study Areas, as defined by the 'Sand and Gravel' and 'Brick Clay' MSAs and presented as Figure A10.9.1:

[4] British Geological Survey (2025). Geoindex Onshore. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.196680041.417781325.1747837448-1294234575.1747837448 (accessed on 25/05/2025).

Mineral Safeguarding Areas. Sand and Gravel members are anticipated to underlie areas of Alluvium / Head Deposits where present.

A10.9.4.4 SITE-SPECIFIC GEOLOGY

25 The site-specific geology has been determined from selected historical borehole records within proximity of the affected Study Areas, available on the British Geological Survey (BGS) website. Due to the significant number of available borehole records across the wider area, and mainly within the MMG, only a selected number of records have been utilised to identify general thicknesses of each strata. It should be noted that where River Terrace Deposits are identified on historical records, these correlate to the Holme Pierrepont Sand and Gravel Member outlined above.

Table A10.9.2 – Site-Specific Geology

Strata	Typical Lithological Description	Thickness (m)
Topsoil	Light sandy, gravelly soil	0.20 – 0.60
Alluvium	Rounded subangular quartz and gravel fragments	0.40 - 1.70
River Terrace Deposits	Clayey sand and sandstone, quartz and flint gravel	2.40 – 7.90
Glaciofluvial Deposits	Described only as ‘drift’. Comprising sand and gravel	23.60
Mercia Mudstone Group	Mudstones, red and green. Bands of siltstone, sandstone and marl, with occasional to frequent gypsum beds	179

*BGS borehole records utilised in the above: SK76SE25, SK76SE3, SK76SE7, SK76SE4, SK75NE88, SK75SE19, SK75NW11, SK75NW10, SK76SW26 and SK76NE68

26 The available geological logs demonstrate that the Sand and Gravel predominantly in the east of the Study Areas ranges between 2.40 m and 7.90 m in thickness with occasional sandy layers or clayey and with overburden material comprising either topsoil or Alluvium.

27 The available information demonstrates that the Brick Clay deposits (MMG) across the Development Site has been proven to thicknesses of at least 179 m consisting of mudstone with subordinate bands of siltstone, sandstone and marl, with occasional to frequent gypsum beds.

A10.9.4.5 ENVIRONMENTAL SENSITIVITY

28 The affected Study Areas are located within or near the following environmentally sensitive sites:

- Sites of Special Scientific Interest (SSSI) – approximately 1 m to the immediate north of Study Area 1 identified as Eakring and Maplebeck Meadows, Mather Wood SSSI identified 50 m south of Study Area 2

- Ancient Woodland identified on site at Study Area 7 and 5 m north, south and west of Study Area 1 as well as 18 m, 20 m and 108 m north of Study Area 8.

A10.9.4.6 HYDROLOGY AND HYDROGEOLOGY

29 There are several minor surface water features within close proximity of the Development Site, however the most significant nearest surface water feature of note is the River Trent which runs adjacent to Study Areas 3 - 6.

- The Holme Pierrepont Sand and Gravel Member, Alluvium and Glaciofluvial Deposits are designated Secondary A Aquifers, the Glacial Till is Secondary Undifferentiated whilst the underlying mudstone bedrock is considered to be Secondary B and Secondary Undifferentiated (mudstone and dolomitic siltstone facies of MMG, respectively).

A10.9.4.7 ARCHAEOLOGICAL RESOURCE AREAS

30 An Archaeological Resource Area (ARA) is identified across the east and south east of Study Area 4. According to the Nottinghamshire Minerals Local Plan[5] (MLP), there is a presumption against mineral extraction within such areas for the Plan period. Policy DM6 states, *"No development shall occur within the archaeological resource area at South Muskham."* The extents of South Muskham Archaeological Resource Area is presented within Figure A10.9.3: Extracts of NMLP Inset 9 extent of South Muskham ARA and its location with respects to the Study Areas..

31 The policy therefore places greater importance on such archaeological features and is considered to outweigh the importance of mineral extraction in such areas.

A10.9.4.8 AIRFIELD SAFEGUARDING AREAS

32 Under Policy DM10 of NCC's MLP[6], it is indicated that Study Areas 1-6 and 8 are located within designated Airfield Safeguarding Areas (ASAs) that protect RAF Syserston MoD Aerodrome to the south and Retford (Gamston) Airport to the north. These ASAs are critical for maintaining the safety and operational efficiency of the airfields by minimising risks such as bird strikes.

33 A substantial mineral extraction project such as what would be proposed for the affected Study Areas poses significant concerns within these safeguarded zones. The potential creation of large bodies of standing water during the extraction process can attract birds and subsequently establish bird habitats. The presence of birds in proximity to the airport/aerodrome dramatically

[5] Nottinghamshire County Council (2021). Nottinghamshire Minerals Local Plan Adopted 2021. Available at: https://www.nottinghamshire.gov.uk/planning-and-environment/minerals-local-plan/adopted-minerals-local-plan (accessed on 21.05.2025).
[6] Nottinghamshire County Council (2021). Nottinghamshire Minerals Local Plan Adopted 2021. Available at: https://www.nottinghamshire.gov.uk/planning-and-environment/minerals-local-plan/adopted-minerals-local-plan (accessed on 21.05.2025).

increases the risk of bird strikes, which endangers both aircraft and human lives.

34 Given these substantial risks, it is unlikely that permission for mineral extraction within the study areas covered by ASAs would be given. The protection of airfield operations and safety is a priority, and any activities that could compromise these objectives are unlikely to be permitted as per DM10 of the NMLP.

A10.9.5 MINERAL INFRASTRUCTURE ASSESSMENT

A10.9.5.1 INTRODUCTION

35 Three mineral Infrastructure sites are identified within 2 km of the Development Site. In accordance with paragraph 200 of the NPPF (2025)[7], planning decisions should ensure that new development can be integrated effectively with existing businesses, whereby existing businesses should not have unreasonable restrictions placed on them as a result of permitted development. Equally, where existing businesses and facilities could significantly adversely affect new development, suitable mitigation must be in place prior to the completion of development. The potential impacts to the safeguarded infrastructure posed by the development, potential impacts to the new development, and any mitigation measures are discussed below.

A10.9.5.2 SAFEGUARDED MINERAL INFRASTRUCTURE

36 There are three safeguarded mineral infrastructure sites that are currently permitted extraction sites; Cromwell Quarry, Langford Lowfield and Besthorpe Quarry.

37 Cromwell Quarry is located some 0.5 km to the east of Study Area 6 at its closest point. Operated by Cemex, Cromwell Quarry is a sand and gravel (aggregate) quarry with onsite secondary processing facilities. The Wharf here is c. 900 m east of Study Area 6.

38 Langford Lowfield is located at its closest point, approximately 1.3 km to the east of Study Area 6. Operated by Tarmac, Langford Lowfield's is a sand and gravel (aggregate) quarry. The Wharf here is approximately 1.2 km east of the Development Site.

39 Besthorpe Sand and Gravel Quarry is located at its closest point, approximately 1.9 km to the north-east – east of the Development Site and is operated by Tarmac.

40 There are two large allocated mineral site areas that are associated with the sand and gravel quarries stated above and outlined on Figure A.10.9.1: Mineral Safeguarding Areas.

[7] Ministry of Housing, Communities and Local Government, National Planning Policy Framework (Dec 2024/ Amended Feb 2025) Available here: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf (accessed 21.05.2025)

A10.9.5.3 POTENTIAL IMPACTS TO SAFEGUARDED MINERAL INFRASTRUCTURE SITES

41 The Development will comprise the installation of solar photovoltaic panels across several study areas with construction traffic limited to the construction phase of the park, and limited number of workers to attend site on an ad hoc basis. Given the existing road infrastructure with the A1 between the Development Site and the permitted mineral sites and short-term traffic volume increase associated with the construction phase, it is not considered that the project related traffic will adversely impact on the ongoing operations of the existing mineral infrastructure sites.

42 The construction of the solar park is not anticipated to create significant noise, odour, light, visual or dust pollution over the park's lifecycle (construction, operation, decommissioning), where the photovoltaic panels are typically anchored by driven piles. Given the nature of the Development, it is not considered that the development will have a significant adverse impact on the current and forecasted operations at the permitted mineral sites, nor would the development constrain nor impact the sand and gravel reserves permitted for the mineral sites and therefore there is no reason, with respects to the solar park, that the Infrastructure Sites would not meet their full capacities or projected volumes of mineral extraction.

A10.9.5.4 POTENTIAL IMPACTS TO DEVELOPMENT

43 The nature of the Development is not considered to increase the sensitivity of the Development Site, and the Development is not considered to be sensitive to visual, light, noise or odour impacts from ongoing operations at the permitted mineral sites. There are more sensitive developments such as residential areas in closer proximity to the permitted mineral sites than the Development Site, and given they are permitted sites, it is anticipated that all operations are conducted in accordance with agreed regulations and levels with respects to dust, noise, light, visual and odour emissions.

A10.9.5.5 SUMMARY OF ASSESSMENT

44 The findings of the mineral infrastructure assessment above have been summarised and presented in Table A10.9.3 below.

Table A10.9.3 – Mineral Infrastructure Assessment Summary

Requirements of Assessment	Summary of Assessment
Potential Sensitivity of Development Posed by Safeguarded Mineral Infrastructure	The Development is not considered to be particularly sensitive to visual, odour, light and odour impacts. It is anticipated that any dust is regulated under approved planning conditions of the existing permitted mineral sites.

Requirements of Assessment	Summary of Assessment
Potential Impact of Development on the Effective Working of the Safeguarded Mineral Infrastructure	There will be no impact to the effective working of the safeguarded infrastructure, with no loss in capacity nor any potential constraints posed on the operation of the facility caused by the Development.
Mitigation Measures to be included by the Development	No mitigation measures are required.

A10.9.6 MINERAL RESOURCE ASSESSMENT

A10.9.6.1 EXTENT AND EXTRACTABILITY OF POTENTIALLY VIABLE MINERAL RESOURCES

45 The borehole logs summarised in Table A10.9.2 demonstrate that the safeguarded mineral resources are sand and gravel (of the Holme Pierrepont Member) and brick clay (of the Mercia Mudstone Group).

46 Study areas 3, 4, 5 and 6 fall partially within the sand and gravel MSA, as demonstrated within Figure A10.9.1: Mineral Safeguarding Areas. Each of the study Areas comprise predominantly individual fields.

47 The distribution of the sand and gravel mineral resource is therefore relatively localised in the east of the Study Areas and is associated with the River Trent. A review of a number of available BGS records indicate the unit to vary in thickness between 2.40 and 7.90 m, with overburden material comprising topsoil or Alluvium, up to 1.70 m in thickness. The thickness is anticipated to decrease with distance from the River Trent.

48 The sand and gravel mineral resource is therefore considered to be highly variable across these Study Areas with respects to both thickness and distribution. In terms of extraction, the Study Areas that fall within the MSA comprise several individual fields and therefore to make any extraction of those fields feasible, it may be appropriate to combine extraction of the wider area beyond the Order Limits, subject to availability of that land. Although brick clay is present across all Study Areas either beneath superficial cover or at outcrop, the nature of the project means that any development is distributed across sporadic study areas. Each of these areas comprise individual field parcels, and in terms of mineral extraction, would need to be assessed on a per field basis.

49 As with the sand and gravel resource, it would be considered more feasible where the fields are considered within a larger area proposed for mineral extraction, where the resource is required. In addition to this, the brick clay is present beneath a significantly thick overburden cover of superficial deposits. The cost associated with overburden removal, and importation of suitable material to backfill substantial areas of extraction, would also need to be considered, to establish how economically viable the potential brick clay resource is beneath the Study Areas.

50 The area for potential extraction, regardless of the potential mineral volumes, is also subject to buffer zones and constraints that may reasonably be expected to apply given the site setting and nature of the extraction processes.

A10.9.6.2 BUFFER ZONES AND CONSTRAINTS ON MINERAL EXTRACTION

51 As described in Mineral Safeguarding in England: good practice advice (BGS, 2011)[8] buffer zones are commonly applied around safeguarded mineral areas and used in the consideration of the extent of viable resources. Buffer zones limit the area of potentially extractable resource, by defining those areas where the extraction of safeguarded mineral resources would not be expected due to:

- Proximity to existing sensitive development that could be adversely affected by the effects of extraction (i.e. noise, dust, visual impact, transport and / or vibration as per paragraph 224c of the NPPF, 2024[9]).
- The requirement to protect the natural and historic environment, human health or aviation safety under paragraph 223f and 224b of the NPPF (2024) that could be adversely impacted by extraction.
- Proximity to National Parks, the Broads, National Landscapes and World Heritage Sites, scheduled monuments and conservation areas under paragraph 224a.
- Archaeological Resource Areas - South Muskham parish has a presumption against mineral extraction within the South Muskham area for the duration of the Plan period (2036) in Study Area 4.
- Geotechnical and operational considerations associated with mineral extraction, most notably securing a geotechnically sound site boundary.

52 The width of protective buffer zones that may potentially be applied are not prescribed in the planning policies reviewed as they would typically be determined as part of the planning process for a mineral extraction proposal. Furthermore, the detailed quantitative assessment required to determine impacts and define buffer zones are beyond the scope of an MRA. However, it is noted that:

- Industry guidance does provide some indication of possible standoffs that may be required, *e.g.,* Controlling the Environmental Effects of Dust from Surface Mineral Workings (Department of the Environment Minerals Division, 1995)[10]

[8] British Geological Survey (2011) Mineral Safeguarding in England: Good Practice Advice. Available at: Mineral safeguarding in England: good practice advice - MineralsUK (accessed 21.05.2025)
[9] Ministry of Housing, Communities and Local Government, National Planning Policy Framework (Dec 2024/ Amended Feb 2025) Available here: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf (accessed 21.05.2025)
[10] Department of the Environment. Minerals Division. *The Environmental Effects of Dust from Surface Mineral Workings. DOE, 1995*. Available at: *https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/1998/03/dust-surface-mineral/documents/pan-50-annex-b-pdf/pan-50-annex-pdf/govscot%3Adocument/pan%2B50%2Bannex%2Bb.pdf (accessed on 25/05/2025).*

states that in the absence of a quantitative dust assessment a minimum standoff of 100 – 200 m is recommended from significant dust sources.

53 For the purpose of this MRA, and following a review of the documents received from the Client, the following buffer zones are considered reasonable and have been initially applied to further evaluate the distribution and extent of viable mineral resources and its associated economic viability as a resource:

- 25 m standoff to protect mineral excavation boundary structural integrity;
- Existing residential development: 100 m buffer zone;
- River Trent: 50 m buffer zone;
- Ancient Woodland: 25 m buffer zone;
- Scheduled monuments: I) 50 m II) 75 m III) 100 m;
- Local Wildlife sites: 100 m;
- Listed buildings: 100 m;
- Conservation Areas: 100 m buffer zone;
- SSSIs: 50 m buffer zone;
- Archaeological Resource Area: 100 m; and
- Airfield Safeguarding Areas (as indicated in the NMLP).

54 If the above buffers are also considered, the volume of potentially viable mineral resources and area for mineral extraction is reduced.

A10.9.6.3 TEMPORARY STERILISATION OF RESOURCES

55 Regardless of whether the mineral resources are considered potentially economically viable, it should be noted that the Development is temporary in nature, with an operational period of 40 years. Therefore, any potential mineral resource underlying the non-mineral development, will not be permanently sterilised from future extraction, in line with part (2) of Policy SP7 of the NMLP[11], nor would the development impose constraints or hindrance to extraction in the vicinity of the Study Areas, due to its low sensitivity.

56 It is also noted that the majority of the Study Areas that are located within the sand and gravel MSA, are not to be developed for solar arrays, but will provide opportunities for enhanced ecological land use that will be returned to its current form following decommissioning of the solar farm. In this context, those study areas will not be permanently sterilised from any built development.

A10.9.6.4 CURRENT EXTRACTION OF SAND AND GRAVEL IN NOTTINGHAMSHIRE

57 In accordance with Policy MP2 of Nottinghamshire County Council's Minerals Local Plan (NMLP), the minimum required landbank for sand and gravel reserves is seven years. The most recent Local Aggregate Assessment

[11] Nottinghamshire County Council (2021). Nottinghamshire Minerals Local Plan Adopted 2021. Available at: https://www.nottinghamshire.gov.uk/planning-and-environment/minerals-local-plan/adopted-minerals-local-plan (accessed on 21.05.2025).

(LAA)[12], published in 2024, indicates that the sand and gravel landbank stands at 16.02 years, with permitted reserves as of 31 December 2023 at 20.66 million tonnes.

58 It is understood that the demand for sand and gravel extraction sites should primarily be met within the established Newark and Idle Valley quarries. These quarries are expected to continue serving as the main sources for meeting regional aggregate needs, thereby minimising the need to open new extraction sites.

59 Nottinghamshire hosts several active mineral working sites, with the nearest to the site being in Newark. Specifically, Besthorpe Quarry and Langford Lowfield's, located in Newark-on-Trent (NG23 7HQ and NG23 7QL respectively), and approximately 1.9 and 1.1 km east of the easternmost border of Study Area 6. Aerial imagery indicates the presence of permanent plants and conveyors at these quarry sites. However, the River Trent separates these quarries from the site, making an extension from the quarry towards the site unlikely to be feasible. Should a new planning application for mineral extraction at the site be considered, it would necessitate the development of new routes and roads to facilitate access and transportation.

60 In summary, Nottinghamshire's current landbank for sand and gravel reserves, bolstered by existing quarries in Newark and Idle Valley, is well-positioned to meet regional demands until 2036. The geographical and logistical challenges presented by the River Trent further emphasise the focus on utilising existing permitted sites rather than extending extraction operations into new areas.

61 Given the temporary nature of the Development, it is unlikely that the available sand and gravel reserves will be considered sterilised. This means that the underlying sand and gravel reserves remain accessible and can be extracted in the future if there is a need to meet demand. The installation of solar parks does not permanently alter the land, meaning the valuable sand and gravel resources beneath will remain available for future use, only temporarily unavailable.

A10.9.6.5 CURRENT EXTRACTION OF BRICK CLAY IN NOTTINGHAMSHIRE

62 In accordance with Policy MP6 of Nottinghamshire County Council's Minerals Local Plan (MLP)[13], a minimum landbank of 25 years for brick clay reserves must be maintained. Although there is currently no national demand forecast for brick clay, Footnote 80 of the National Planning Policy Framework (NPPF)[14]

[12] Nottinghamshire County Council (2024). Nottinghamshire and Nottingham Local Aggregates Assessment. Available at: https://www.nottinghamshire.gov.uk/media/w0sbjgyl/nottinghamshireandnottinghamlocalaggregateassessment2023salesdata.pdf (accessed on 21.05.2025).

[13] Nottinghamshire County Council (2021). Nottinghamshire Minerals Local Plan Adopted 2021. Available at: https://www.nottinghamshire.gov.uk/planning-and-environment/minerals-local-plan/adopted-minerals-local-plan (accessed on 21.05.2025).

[14] Ministry of Housing, Communities and Local Government, National Planning Policy Framework (Dec 2024/ Amended Feb 2025) Available here: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf (accessed 21.05.2025)

mandates a 25-year landbank to be identified for active brickworks. This ensures a long-term supply of raw materials to support the brick manufacturing industry.

63 Nottinghamshire is home to two brickworks, which are anticipated to sustain the required brick clay landbank until 2047. These facilities are strategically positioned to meet the regional demand, thereby negating the necessity for new brickworks. Given the ample provision of brick clay reserves and the expected sufficiency of the existing brickworks, applications for new brickworks are unlikely to be approved. This approach aligns to optimise resource use and minimise the environmental impact of additional extraction sites.

64 Given the temporary nature of solar parks, it is unlikely that these reserves will be considered sterilised. This means that the underlying brick clay reserves will remain accessible and can be extracted in the future if there is a need to extend the landbank. The installation of solar parks does not permanently alter the land, ensuring that the valuable mineral resources beneath remain available for future use.

A10.9.6.6 NEED FOR THE DEVELOPMENT AND TIMESCALES

65 Two of the five objectives of the adopted Nottinghamshire Minerals Local Plan are to *'Ensure more efficient exploitation and use of primary mineral resources by minimising waste, increasing levels of aggregate recycling and the use of alternatives from secondary and recycled sources'* and to '*Conserve and enhance Nottinghamshire's natural environment including its distinctive landscapes, habitats, geology, wildlife species and ecological health of water bodies by avoiding, minimising and mitigating potential negative impacts'*

66 The Development is designated as a Nationally Significant Infrastructure Project (NSIP) because it has the potential to deliver 840 MWe of power to the National Grid. It is projected that the Development will generate approximately 800 MW of clean energy, sufficient to power around 400,000 homes in Nottinghamshire. This contribution is crucial for supporting Nottinghamshire's goal of becoming carbon neutral by 2030 and achieving 100% net-zero carbon emissions by 2050, as outlined in Nottinghamshire's Carbon Reduction Plan. Accepted by the district councils, this plan is a key part of the region's strategy to transition to net-zero and combat climate change. Therefore, the Development represents a significant opportunity to advance Nottinghamshire's transition to a sustainable, low-carbon future.

A10.9.6.7 INCIDENTAL EXTRACTION

67 The anticipated superficial cover across the Development itself, within the Study Areas, is sporadically distributed, with some areas likely having greater overburden material where alluvium is present. Incidental extraction of safeguarded sand, gravel, and brick clay is considered feasible during the construction phase, particularly where excavations are required for foundations or subsurface utilities.

68 If relatively clean aggregate is excavated during construction, the small volume of mineral resource can be reused on-site to achieve the development's cut-fill balance where needed. Alternatively, this material can be exported off-site to the local market. Excavated sand and gravel may also be utilised as sub-base material for areas of development requiring structural support. Material and soils will be managed in line with the provisions of ES Technical Appendix A5.3 - Outline Construction Environmental Management Plan (CEMP) [EN010162/APP/6.4.5.3], which is provided as part of the submission, and the Soil Management Plan [EN010162/APP/6.4.17.2].

A10.9.6.8 ASSESSMENT AGAINST PLANNING POLICIES

69 The finding of the mineral resource assessment presented above has been evaluated against the mineral planning policies relevant to the Development across the Study Areas and described in Section 3. This assessment is presented in Table A10.9.4 below.

Table A10.9.4 - Assessment Against Mineral Planning Policies

Policy	Planning Condition / Position Statement	Summary of Assessment
Nottinghamshire County Council Minerals and Waste Local Plan (adopted 2017)		
Policy SP7: Minerals Safeguarding, Consultation Areas and Associated Minerals Infrastructure	Locally and nationally important mineral resources, permitted reserves, allocated sites and associated minerals infrastructure will be safeguarded from needless sterilisation by non-mineral development through the designation of minerals safeguarding areas as identified on the Policies Map.	Applicable – The Study Areas partially fall within MSAs associated with Sand and Gravels and Brick Clay.
	Non-mineral 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.	Applicable – The Development is temporary in nature and therefore will not permanently sterilise any potential mineral resource beneath the Study Areas, nor will it impose significant constraints or hindrance to any future mineral extraction within or within close proximity of the Study Areas. In line with the MLP, under Policy SP7, there is no defining time period that NCC consider as 'temporary' and therefore the Development falls under the category of temporary development.
	Where this cannot be demonstrated, and where there is clear and demonstratable need for non-minerals development, prior extraction will be sought where practicable.	Not Applicable

A10.9.7 SUMMARY AND CONCLUSIONS

70 A mineral resource assessment was undertaken to support the planning application for the GNR; “the Development” within the Order Limits.

71 The previous Order Limits were divided into eight study areas by RPS for ease of assessment. These areas are situated west of Newark-on-Trent, south of Egmanton, and east of Eakring and seven of the eight fall within designated Brick Clay and Sand and Gravel Mineral Safeguarding Areas (MSAs) set out within the Nottinghamshire Minerals Local Plan.

72 Mineral issues associated with the Development that is proposed across the Study Areas, have been considered in relation to the currently adopted Nottinghamshire County Council Mineral Local Plan for the period up to 2036 (adopted in 2021).

73 This mineral resource assessment has utilised publicly available geological information but has placed reliance on site-specific geological and hydrogeological data obtained from available historical BGS borehole records and BGS Memoirs.

74 The safeguarded mineral resources present are ‘Sand and Gravel’ of the Holme Pierrepont Member and ‘Brick Clay’ of the Mercia Mudstone Formation. BGS mapping indicates that whilst the Mercia Mudstone underlies all Study Areas at depth, the overlying sand and gravel is variable in thickness and locally distributed in the east associated with the River Trent. Although in total over the whole Study Areas there is likely to be a considerable brick clay and sand and gravel resource, given the distribution of the Development over several individual fields that make up the Study Areas, these do not individually constitute potentially viable resources nor the areas to accommodate such mineral extraction.

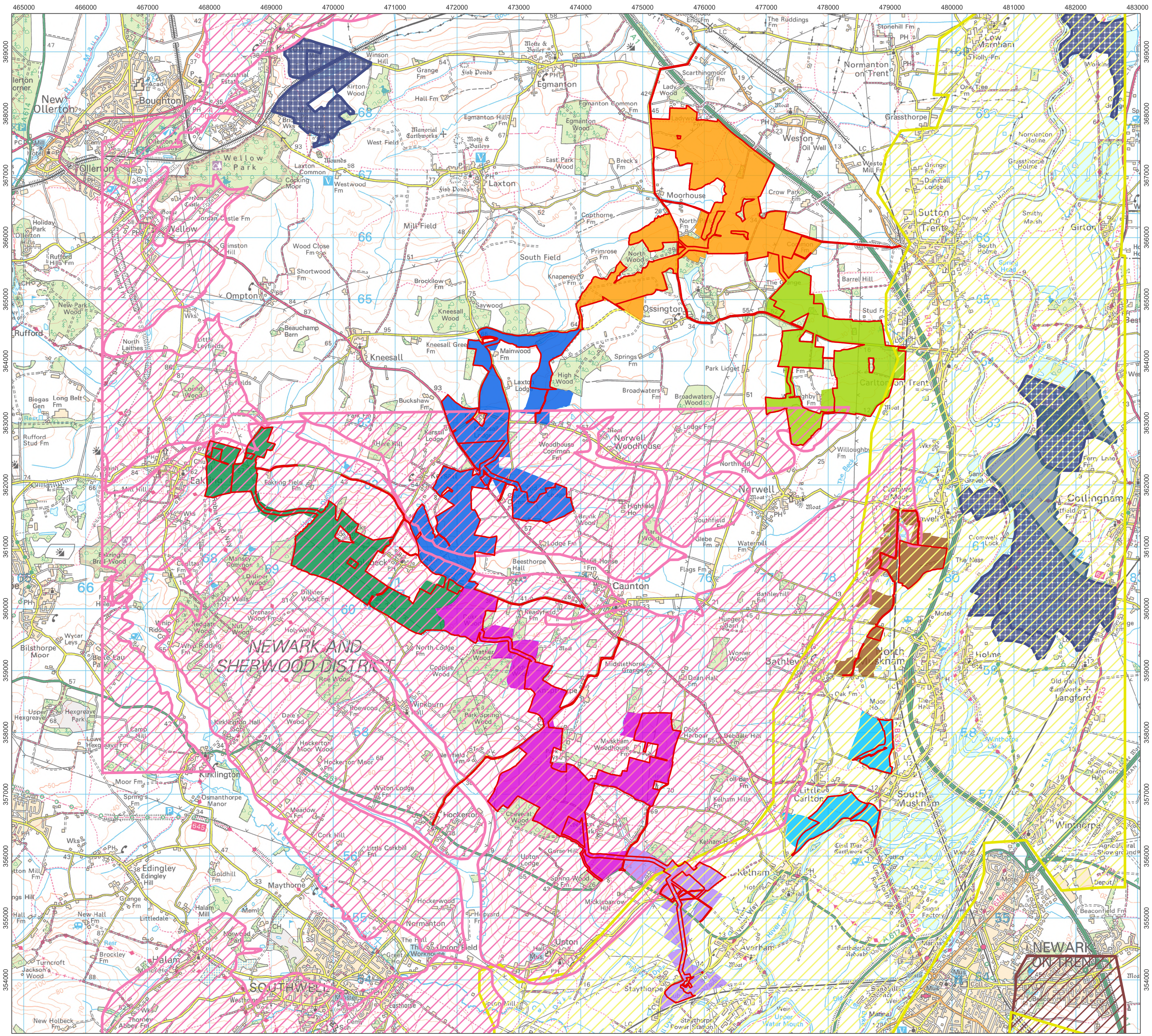
75 That potential volume is further reduced with the application of appropriate buffers such as those associated with structural integrity of any mineral extraction activity and distance to highly sensitive receptors. There are also designated Archaeological Resource Areas and Airfield Safeguarding Areas within proximity of the Study Areas, which their importance, in accordance with the NMLP, outweighs the requirement for mineral extraction.

76 The incidental extraction of safeguarded Sand and Gravel resources is expected to occur during the construction phase for the foundations of substations, and that small volume of mineral resource will be re-used during the construction phase of the project. Material and soils will be managed in line with the provisions of ES Technical Appendix A5.3 - Outline Construction Environmental Management Plan (CEMP) [EN010162/APP/6.4.5.3], which is provided as part of the submission, and the Soil Management Plan [EN010162/APP/6.4.17.2].

77 A number of Mineral Infrastructure Sites are located within 2 km of the Study Areas. A mineral infrastructure assessment has been undertaken and concluded that the Development is not highly sensitive to existing permitted sites, nor would have significant adverse impacts in terms of operations, capacity and allocated projected mineral extractions of the existing permitted sites.

78 The results of the mineral resource assessment have been evaluated against Policy SP7: Minerals Safeguarding, Consultation Areas and Associated Minerals Infrastructure. The assessment has concluded that the Development across the Study Areas will not result in the permanent sterilisation of mineral resources, and the national importance of the Development outweighs the importance of the safeguarded resources beneath the affected Study Areas, and is therefore consistent with Policy SP7, without the need for prior extraction.

ANNEX A - FIGURES



Order Limits
Study Area 1
Study Area 2
Study Area 3
Study Area 4
Study Area 5
Study Area 6
Study Area 7
Study Area 8
Allocated Mineral Site
Permitted Mineral Site
Mineral Safeguarding Area for Brick Clay
Mineral Safeguarding Area for Gypsum
Mineral Safeguarding Area for Sand and Gravel

1:60,000 Scale @ A3

0 0.5 1 2 km

Ref: NP12850 | Date: 12/06/2025

Mineral Safeguarding Areas
Figure A10.9.1

Great North Solar and Biodiversity Park Environmental Statement

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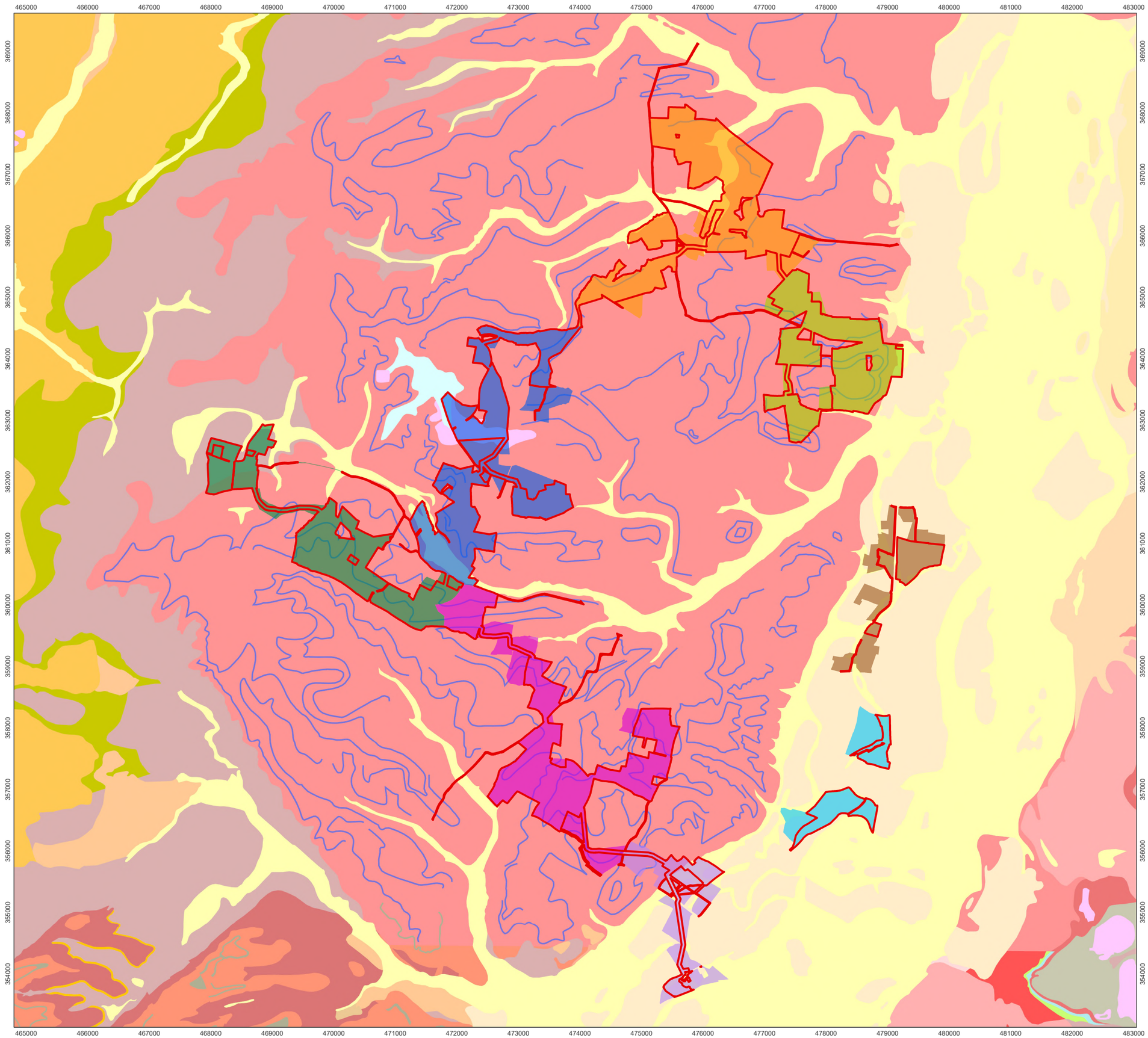

Order Limits
Study Area 1
Study Area 2
Study Area 3
Study Area 4
Study Area 5
Study Area 6
Study Area 7
Study Area 8

Bedrock Geology 1:50 000 Scale

Mercia Mudstone Group- mudstone
Mercia Mudstone Group - siltstone, dolomitic
Taporley Siltstone Formation - siltstone, mudstone, and sandstone
Gunthorpe Member - mudstone

Superficial Deposits 1:50 000 Scale

Till, Mid Pleistocene - Diamicton
Alluvium - clay, silt, sand, and gravel
Holme Pierrepoint Sand and Gravel Member - sand and gravel
Galciofluvial Deposits, Mid Pleistocene - Sand and Gravel

1:60,000 Scale @ A3

0 0.5 1 2 km

Ref: NP12850 | Date: 12/06/2025

Extracts from BGS Geoindex 1:50,000 Mapping Figure A10.9.2

Great North Solar and Biodiversity Park Environmental Statement

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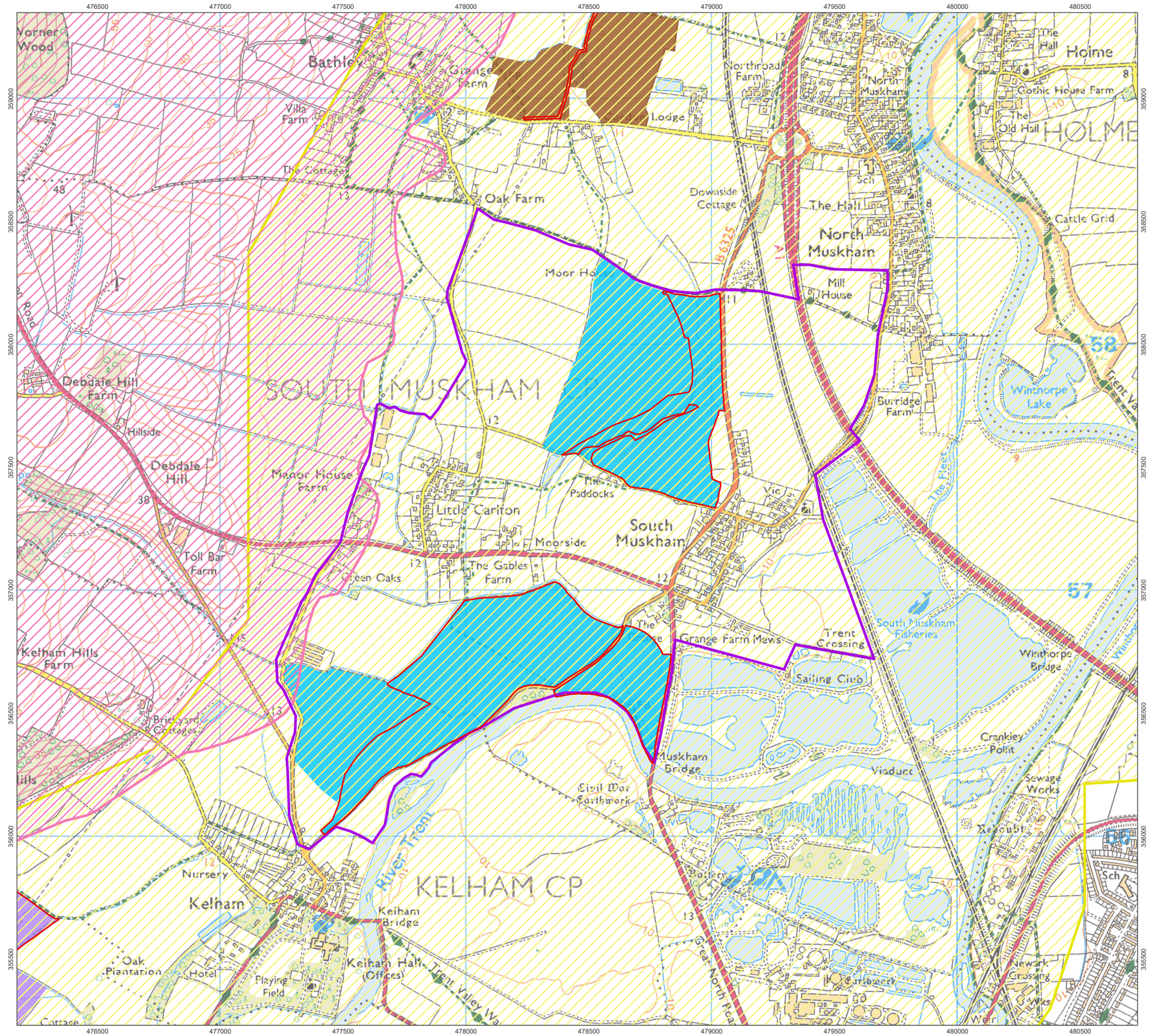

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Extracts of NMLP Inset 9 Extent of South Muskham ARA
Figure A10.9.3

Great North Solar and Biodiversity Park
Environmental Statement

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