



Design and Access Statement

Kingston Solar Farm

07/02/2022



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INTRODUCTION

BACKGROUND

- 1.1. This Design and Access Statement (“DAS”) has been prepared by Neo Environmental Limited, on behalf of RES Ltd (“the Applicant”) in support of a planning application submitted to Rushcliffe Borough Council (“the Council”) for a proposed 49.9MW solar farm with associated infrastructure (the “Proposed Development”) on lands circa 1.3km south of the village of Gotham and 0.75km northwest of the village of East Leake, Nottinghamshire (the “Application Site”).
- 1.2. The application seeks full, temporary (40 years), planning permission for Kingston Solar Farm with the following description of development:
- “Construction of a solar farm consisting of the construction of photovoltaic (“PV”) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, 2 no. temporary construction compounds and all ancillary grid infrastructure and associated works.”*
- 1.3. Following the 40-year operational phase, the equipment associated with the Proposed Development would be removed, and the Application Site reinstated to its former state. This, coupled with the measures that are proposed to enhance the landscape and increase biodiversity of the Application Site will ensure that upon decommissioning, the Application Site can not only be restored to its current agricultural use, but will also have resulted in net beneficial gains for ecology and the local landscape fabric.

ROLE AND PURPOSE OF THE DESIGN AND ACCESS STATEMENT

- 1.4. This DAS has been prepared in accordance with Article 9 of the Town and Country Planning Act (Development Management Procedure) (England) Order 2015¹ (“the DMPO”) and National Planning Practice Guidance (“NPPG”) which set out the requirements for Design and Access Statements.
- 1.5. The NPPG states that a Design and Access statement must:
- a) *Explain the design principles and concepts that have been applied to the proposed development; and*

¹ <https://www.legislation.gov.uk/uksi/2015/595/article/9/made>

- b) *Demonstrate the steps taken to appraise the context of the proposed development, and how the design of the development takes that context into account.*

1.6. The NPPG also sets out what should be included in a Design and Access Statement and makes the following points:

- *A development's context refers to the particular characteristics of the application site and its wider setting. These will be specific to the circumstances of an individual application and a Design and Access Statement should be tailored accordingly.*
- *Design and Access Statements must also explain the applicant's approach to access and how relevant Local Plan policies have been taken into account. They must detail any consultation undertaken in relation to access issues, and how the outcome of this consultation has informed the proposed development. Applicants must also explain how any specific issues which might affect access to the proposed development have been addressed.*

1.7. The purpose of this document is to demonstrate that the Applicant has fully considered the design and access issues as part of the comprehensive preparation of the scheme prior to submission of the planning application. This report therefore covers the following matters:

- Use – what buildings and spaces will be used for;
- Amount – how much will be built on site;
- Layout – how the buildings and public and private spaces will be arranged on site, and the relationship between them and the buildings and spaces around the site;
- Scale - how big the buildings and spaces would be (their height, width and length);
- Landscaping - how open spaces will be treated to enhance and protect the character of a place;
- Appearance - what the building and spaces will look like, for example, building materials and architectural details;
- Access - why the access points and routes have been chosen, and how the site responds to road layout

1.8. This Design and Access Statement should be read in conjunction with the accompanying Planning Statement which assesses the planning policy context relating to the design and access issues of the Proposed Development.

SITE CONTEXT

- 1.9. The Application Site comprises land circa 1.3km south of Gotham and 0.75km northwest of East Leake, Nottinghamshire. The Application Site comprises 16 fields, totalling 80.65 hectares (ha), although only 55.65 ha of this area is required to accommodate the solar arrays themselves, with the remaining area being used for ancillary infrastructure and mitigation and enhancement measures.
- 1.10. The site is located within the administrative boundary of Rushcliffe Borough Council and is located entirely within an area of the Nottingham and Derby Green Belt, covered by Policy 13 within the Rushcliffe Local Plan Part 1: Core Strategy and Policies 21 and 22 of the Local Plan Part 2: Land and Planning Policies.
- 1.11. The Proposed Development Site is split into two sections; north and south, by an area of woodland, Leake New Wood. The northern section (Fields 1 – 11; see **Figure 3: Field Numbers of Volume 2, Planning Application Drawings**) extends across several rectilinear agricultural fields largely contained by existing mixed woodland including Gotham Wood to the north, Cuckoo Bush to the east, Leake New Wood to the south and Crownend Wood to the west. The southern section (Fields 12 – 16) is also surrounded by pockets of woodland including Oak Wood, Crow Wood and Ash Spinney.
- 1.12. The Application Site is in an area with an existing industrial presence with a telecoms mast located on the southwestern boundary of Field 7, a wood pole line along the boundary between Fields 7 and 8 and within the southern section of Fields 4 and 5 and overhead lines located along the southern boundary of Field 16 and the eastern boundary of Field 15.
- 1.13. The surrounding area is semi-rural in nature with the site being surrounded by agricultural fields and woodland in most directions. The area is however punctuated by individual farmsteads and Rushcliffe Golf Club is located on the eastern boundary of Field 15. There are also various industrial brownfield sites within the locality including Charnwood Truck Services located directly southwest of Field 4. Additionally, there is a large-scale power station located beyond the A453, circa 1.58km north of the site which is visible from bridleway 12 (see **Figure 16 of Volume 2: Planning Application Drawings**).
- 1.14. Recreational routes include a number of bridleways (BW) which cross or abut the Site providing connectivity to the wider Kingston Estate. These include Gotham BW No. 10, 11 and 12 and West Leake BW's No. 5 and 13. West Leake BW No. 5, also known as the Midshires Way, is also a Long-Distance Walking Association (LDWA) Route bordering the southern boundary of Fields 15 and 16.
- 1.15. The site does not lie within any ecological statutory designated sites and there are no internationally designated sites within 15km. There are however five Special Sites of Scientific Interest (SSSIs) and seven Local Nature Reserves (LNRs) within 5km; the nearest being Rushcliffe Golf Course SSSI located adjacent to Field 15 in the southern section of the site.

- 1.16. There are no statutory landscape designations covering the site or its immediate surroundings although there are three Registered Parks and Gardens and one Country Park within the wider landscape to be considered.
- 1.17. The site is not subject to any statutory designations relating to its historic value, however designated heritage assets further afield include a total of nine Scheduled Monuments and three Registered Parks and Gardens of Special Historic Interest (PGSHIs) within 5km. 27 Listed Buildings (including two Grade I, one Grade II* and 24 Grade II) and two Conservation Areas were also identified within the 2km. 91 sites within the local Historic Environment Record (HER) were identified within 1km, however only two of these lie within the boundary of the Application Site. This includes the 'Well, Gotham' (L48/M48), which contains two references to the former post-medieval well depicted within the northwest of the site on OS historic mapping, as well as the findspot for 'flint flakes from Crow Wood Hill, Gotham' (L27) within the southeast of the Application Site. There are no above-ground standing remains of either feature that could be physically impacted by the Proposed Development, although there is still potential for below-ground remains and therefore, these areas have been excluded from the development design.
- 1.18. The site forms Grade 3b land which does not qualify as 'Best and Most Versatile' agricultural land. The site is capable of being used for sheep grazing during the operational life to continue an agricultural use and the agricultural potential of the site can be fully restored following the decommissioning and removal of the Proposed Development.
- 1.19. While there are several field drains throughout the Application Site, it lies entirely within Flood Zone 1 according to Environment Agency (EA) Flood Mapping, an area described as having a "Low probability" of flooding.
- 1.20. A review of the Rushcliffe Borough Council adopted Local Development Plan has been undertaken. None of the land appears to be allocated for development, however the northern section of the site falls within the Gotham Neighbourhood Plan. Having consulted the Local Plan Policies Map and the Adopted Nottinghamshire Minerals Local Plan, it should be noted that the site is also located within a Mineral Safeguarding Area (Tutbury Gypsum) under Policy 42 of the Local Plan Part 2.
- 1.21. The nearest properties consist of isolated houses and farms, including:
- Hillside Farm, directly north of Field 5;
 - Cuckoo Bush Farm, located in the southeast corner of Field 6;
 - Stone House, located directly south of Field 12;
 - West Leake Hills Cottage (The Cottage), located directly east of Field 14; and
 - Fox Hill Farm and Fox Hill Barn, circa 130m south of Field 16.

1.22. It should be noted that Cuckoo Bush Farm, Stone House and The Cottage all fall within the landowner's ownership.

SITE SUMMARY

1.23. The Proposed Development has been sensitively sited within the local landscape, and is assessed as being a good location for a solar farm for the following reasons:

- The site is surrounded by woodland in most directions, providing robust screening and ensuring that any visual effects are very localised;
- The closest settlement area lies 0.75km southeast, with few residences within close proximity;
- The site is close to a viable grid connection;
- The site has good solar irradiation levels with fields located on a gentle southern slope;
- It lies outside of any statutory environmental, archaeological and landscape designations;
- With the proposed Landscape and Environmental Management Plan (LEMP) and Biodiversity Management Plan (BMP), the site will be significantly enhanced for ecology; and
- Sheep grazing can occur during the development's lifespan, using a low intensity grazing regime which will allow agricultural activities to continue and therefore the site will have a dual use.

1.24. Largely because of the above-mentioned attributes, as well as the benign nature of solar farm development, very little disturbance to the existing environment will be required to implement the Proposed Development.

DESIGN

DESIGN PRINCIPLES AND EVOLUTION

- 1.25. The design of a solar development is an iterative process, running in tandem with the identification of potential environmental effects. As environmental constraints and sensitivities have been identified, the layout of the Proposed Development has undergone a series of modifications to avoid and / or reduce potential environmental effects through careful design.
- 1.26. Following site surveys and identification of various environmental considerations, a constraints map was produced by Neo Environmental Ltd which was used to inform a series of design meetings. Environmental factors considered in the final design of the Proposed Development are discussed further within the Technical Appendices that accompany the planning application (**Volume 3: Technical Appendices**).
- 1.27. Another important factor in finalising the proposals has been consultation with the community and local stakeholders. This process and how feedback received has shaped the design is summarised in the accompanying **Statement of Community Involvement (Vol 1)**.
- 1.28. The final design and layout have been achieved through detailed assessments of the environmental effects and consideration of the identified spatial constraints, combined with consideration of the visual appearance of the Proposed Development from sensitive viewpoints and designated heritage assets. These are briefly discussed below and in more detail in the **Planning Statement (Volume 1)** and within the **Technical Assessments** included in **Volume 3**.
- 1.29. An Agricultural Land Classification (ALC) survey of the site was conducted and confirmed that the land to be used for the Proposed Development consists entirely of Grade 3b agricultural land which is not considered Best and Most Versatile (BMV) land.
- 1.30. The site is not subject to any landscape, archaeological or nature conservation designations, however environmental sensitivities were identified through desk-based assessment and on site work and following this, the Proposed Development has undergone a series of modifications to avoid or reduce potential environmental effects through careful design. This includes implementing 5m buffers from all hedgerows, 10m buffers from woodland, 2m buffers from field drains and 12-15m buffers between PV panels and designated ecology sites. For further detail, please see **Technical Appendix 2: Ecological Assessment, Volume 3**.
- 1.31. A geophysical survey of the site was also undertaken to determine any anomalies likely to indicate archaeological features of significance, although none were identified. Two Historic Environment Record (HER) sites were identified within the development boundary, however neither had surface remains. Despite this, exclusion zones around these features were

implemented into the design to ensure no impact on possible sub-surface remains associated with them. For further detail, please see **Technical Appendix 3: Cultural Heritage Impact Assessment, Volume 3**.

- 1.32. Other factors that have informed the design and layout of the proposed development are considered below.

USE

- 1.33. It is proposed that the use of the site will be for the development of a solar farm, involving solar photovoltaic panels and associated infrastructure. Underground cables will be used to connect the solar installation to the grid network.
- 1.34. The most notable benefit of the Proposed Development is the support it will provide towards the Central Government's commitments to reduce emissions of greenhouse gas emissions and achieve their legally binding target of net zero greenhouse gas emissions by 2050. The Proposed Development will have an export capacity of up to 49.9MW; a solar farm of this size will generate a significant amount of electricity from renewable sources, therefore offsetting the need for power generation from the combustion of fossil fuels including coal and oil. Consequently, during its operational lifespan (40 years), the Proposed Development has the potential to displace electricity generated from fossil fuels and consequently represents carbon savings. See **Planning Statement (Volume 1)** for more detail.
- 1.35. The proposed solar farm will involve the temporary change of use of the land but, due to the time restricted nature of the development, the agricultural use will be retained in the long term. This means that the land will remain designated as greenfield following decommissioning of the Proposed Development, not brownfield. The site will also be capable of dual use farming during its operational period, with small livestock able to graze the land between and amongst the panels which is an effective method of agricultural diversification.
- 1.36. In addition, the minimal physical intrusion of the development itself will mean that the panels can be removed after their 40-year lifetime and the land will revert swiftly to full agricultural use.
- 1.37. Coupled with the measures that are proposed to enhance the landscape and increase biodiversity of the Application Site, this will ensure that upon decommissioning the Application Site can not only be restored to its current agricultural use, but will also have resulted in net gains in terms of both biodiversity and the local landscape fabric.
- 1.38. Due to the land required for such projects, these will generally need to be located outside of urban areas and within the countryside, where the capacity to accommodate such developments exists.

AMOUNT AND FABRICATION

- 1.39. The extent of the Proposed Development has been refined and finalised having consideration of potential environmental effects and consultation with the Local Planning Authority (LPA), statutory and non-statutory consultees and the local community.
- 1.40. As a result of the iterative process, the Proposed Development, although covering a large area of land, is confined to locations where effects have been limited as far as possible and are considered justifiable when considered in the context of the scheme benefits, including to support the UK's renewable energy increase and CO₂ reduction legally binding targets. Consideration of the planning balance which weighs up all material factors associated with the planning application is contained within the accompanying Planning Statement (**Volume 1**).
- 1.41. The Proposed Development will consist primarily of a steel framework to support the PV panels. In addition, a substation and inverter/transformer containers will be introduced as well as access tracks and underground cables. The scheme also includes boundary fencing and a CCTV system to restrict access and protect the scheme from theft and vandalism. This is the minimal level of development necessary to ensure that the site performs effectively with regards to its purpose of generating low carbon renewable energy.
- 1.42. Different levels of intrusion and disturbance are anticipated for different construction elements of the proposed solar farm. All construction elements involving topsoil stripping or deeper excavations are considered to be ground disturbance derived from infrastructure during the construction phase, while impacts resulting from the solar panels themselves, as well as the perimeter fencing, are considered to be ground disturbance derived from piling effects.
- 1.43. Overall, the proposed footprint of the Proposed Development is expected to be circa 5.33% of the Application Site area (80.65ha). The majority of the Application Site area will be utilised for solar panels only, which comprises a 'pin-prick' effect, similar to the introduction of fence posts and is considered to cause minimal disturbance. The cumulative 'pin-prick' ground disturbance occurring from the piling for the panels themselves will be less than 0.05% of the Application Site area. The highest ground disturbance occurring from the proposed access tracks, temporary construction compounds and cable trenches. A lower area of ground disturbance will occur from excavations required for infrastructure such as the ancillary buildings.

LAYOUT

- 1.44. The infrastructure layout of the Proposed Development can be found as **Figures 4 and 5 within Volume 2: Planning Application Drawings**.

- 1.45. In proposing the general layout of the development of the main project site, great consideration was given to the retention of the established field boundaries on site along with planting and enhancement of native hedgerows and trees. This will help ensure that the development is well contained both physically and visually.
- 1.46. The Application Site is well located geographically for solar gain. The photovoltaic panels are oriented in a southwards direction and will be inclined at an angle between 10 and 40 degrees to maximise solar gain and will remain in a fixed position throughout the day and during the year (i.e. they will not rotate to track the movement of the sun). The photovoltaic panels will be laid out in rows across the site and will be spaced to avoid any shadowing effect from one panel to another.
- 1.47. A network of internal tracks around the solar panels will be laid to allow vehicle access to the supporting equipment to allow for maintenance. The layout and extent of the tracks is limited to that necessary to provide access and maximise efficiency.
- 1.48. Specific details and areas of the construction elements are detailed below:
- 4,421 module racks, 114,946 modules. 35,368 pile driven poles
 - 1 x Grid Substations - consider the whole area as disturbed (62m(L) x 49.5m(W)= **3069.0m²**)
 - 2 x Equipment Containers (2.4m(L) x 12.2m(W)) = **58.6m²**
 - 20 x Inverter Substations (16.0m(L) x 6.0m(W)) = **1,920m²**
 - 15 x Inverter Substation Hardstanding Areas hardstanding areas (16.00m(L) x 16.0m(W) = **3,840m²**) This will be similar to road design however will be able to withstand heavier loading)
 - 9.88km of deer fencing with 3,294 posts at 3m spacing, c. 0.03m² footprint each: **98.8m²**. Fence is 2.4m high with a 0.1m gap at the bottom.
 - CCTV Posts are 3.5m in height and we have 106 = **59.63m²**
 - Track is average 4m wide and will involve an average of 300mm depth of soil removed. Local widening at turns for access reasons. Occasionally a geosynthetic reinforcement or soil stability will be used to reduce depth. Total length approximately 5.42km (**21,680m²**)
 - Cable trenches are circa 1m deep and up to 1m wide and approximately 6,000m length. Estimated at **6,000m²**
 - 2 x 50m x 60m temporary construction compounds = **6,000m²**

- 1.49. The total ground disturbance area resulting from the Proposed Development is therefore **42,950.39m²** or c. **5.33%** of the Application Site area.
- 1.50. The layout of the equipment has been informed by a number of factors through the site selection and iterative design process. These include:
- The avoidance of environmentally sensitive areas to reduce potential effects relating to ecological assets including the implementation of:
 - 2m drainage ditch buffers;
 - 5m hedgerow buffers;
 - 10m woodland buffers; and
 - 12-15m buffers between PV panels and local ecological designated sites.
 - Reducing potential impacts on the landscape character and fabric of the area and the visual amenity of local receptors by proposing a planting plan with mitigation screening and the implementation of buffers from residential receptors and Public Right of Ways (PRoWs), see **Volume 3, Technical Appendix (TA) 1: LVA and TA 11: PRoW Management Plan** for further details;
 - Buffering development from existing infrastructure including the overhead lines (4.3m either side, 8.6m total) and a gas pipeline (3m either side, 6m total);
 - Achievement of optimum equipment efficiency and energy outputs through effective orientation and positioning;
 - Consultation with the LPA, statutory and non-statutory consultees and the wider community.

SCALE

- 1.51. The scale of development on site has been determined by the equipment necessary to generate the intended capacity of 49.9MW of renewable energy using solar PV technology at the Application Site.
- 1.52. Throughout the design iteration process, the Application Site has reduced in size from 89.1ha at the pre-application advice request stage (January 2021) to the current site area of 80.65ha (December 2021). This was following consideration of a number of factors including to allow buffers from nearby residential properties and PRoWs; to avoid the potential for creating corridors of development around PRoWs; to exclude and / or buffer areas of environmental

sensitivity following desktop analysis and site study and to ensure that the Proposed Development fits congruously within the surrounding environment, reducing the potential for adverse visual or cumulative landscape impacts.

- 1.53. All of the plant buildings on site will be at or below single storey level. Even when viewed from nearby public vantage points, the scale of development will not be overbearing due to its limited height and relatively benign appearance (i.e. lack of movement and external illumination etc).
- 1.54. Each array of panels within the field will be mounted on a simple metal framework. The main purpose of the mounting structure is to hold the modules in the required position without undue stress. It must be capable of withstanding appropriate environmental stresses for the location, such as wind or snow loading. The framework will be driven into the soil between 1 and 2 metres deep, avoiding the need for deep foundations. Such supporting systems are designed to avoid the use of concrete foundations and are reversible.
- 1.55. With regard to the proposed ancillary buildings and associated infrastructure, they are designed to be as small as possible while still being capable of undertaking their required function within the site. Such structures, with the exception of the tower on the substation located in Field 5, will not be prominent within the surroundings and will be smaller than many isolated stores and barns typically found in the countryside environment. The existing woodland and hedgerows located in the surrounding area, combined with the proposed landscape enhancements means that views of the Proposed Development will be very localised and unobtrusive in the wider landscape. Further information regarding this can be found in **Volume 3, Technical Appendix 1: LVA**.
- 1.56. The cables associated with the Proposed Development will be buried underground and will therefore be appropriate to the setting and location.

APPEARANCE

- 1.57. The Proposed Development Site is surrounded by woodland in most directions, providing robust screening and ensuring that any visual effects are very localised. Additionally, the closest settlement area lies 0.75km southeast, with few residences within close proximity. Visual effects of the Proposed Development have been assessed in more detail in the Landscape and Visual Assessment which can be found in **Volume 3, Technical Appendix 1**. In the longer term as a result of the mitigation planting, localised visual effects would be reduced. The planting plan provides for the introduction of significant new woodland and hedgerow planting and identifies where hedgerows will be maintained to between 3 and 4m in height to maintain visual screening. Some existing hedgerows are also proposed to be infilled and enhanced.
- 1.58. The substation and containers which house the inverters/transformers will be recessively coloured so as to blend in with the landscape (RAL 6005 – Moss Green).

- 1.59. In terms of reflectance, photovoltaic solar panels are by no means a highly reflective surface. They are designed to absorb sunlight and not to reflect it. Several studies have shown that photovoltaic panels (as opposed to Concentrated Solar Power) have similar reflectance characteristics to water, which is much lower than the likes of glass, steel, snow, and white concrete by comparison. Similar levels of reflectance can be found in rural environments from the likes of shed roofs and the lines of plastic mulch used in cropping. Nonetheless, photovoltaic panels have a flat polished surface, which omits 'specular' reflectance rather than a 'diffuse' reflectance, which would occur from a rough surface.
- 1.60. The surface of the panels will be finished with an anti-reflective coating. This means that the panels will not produce large amounts of glint and glare that will affect visual receptors in the vicinity of the site. A Glint and Glare Assessment was undertaken as part of the planning assessment and, once mitigation was taken into consideration, all impacts were reduced to **None** for all properties with the exception of two landowner properties that remain **Low**. Further information on this can be found in **Technical Appendix 7: Glint and Glare of Volume 3**.

LANDSCAPE

- 1.61. The impact upon the local landscape has been given careful consideration in putting forward the proposed scheme. While a scheme of this size will inevitably have an effect on landscape character as set out above, it has been located so to minimise effects as far as possible.
- 1.62. It is considered that the landform and vegetation including mature trees and hedgerows of the site and surrounding area, make this location ideal for utilisation as a solar farm and the effects resulting from the installation of the development. The mature trees and hedgerows offer significant screening and allow for the proposals to be successfully accommodated.
- 1.63. A Landscape and Visual Assessment is included as **Technical Appendix 1 in Volume 3** which considers the landscape and visual effects of the Proposed Development. Potential visibility of the Application Site is very localised and with the mitigation proposed in the Landscape and Ecology Management Plan (**LEMP; Figure 1.14 of TA 1, Vol 3**), it is anticipated that there will be no significant adverse effects on visual receptors.
- 1.64. In terms of visual effects, consideration was undertaken from ten viewpoints in the surrounding area. A number of these are taken from Public Rights of Way in the vicinity (VP's 2 – 8; see **TA 1: LVA of Vol 3 for further detail**) and these will be subject to significant visual effects during the early operational phase of development, however the hedgerow and tree planting included within the scheme would mitigate such visual effects once it has matured sufficiently, reducing potential visual effects to moderate or below (not significant) by year 10.
- 1.65. Landscape enhancement measures are proposed to provide screening and improve the sites capacity to host a greater range of biodiversity. These include native hedgerow and tree

planting and the introduction of native grasses and wildflowers throughout the Application Site, providing additional habitat and food resources for the local wildlife as well as providing mitigation screening for the Proposed Development, reducing the potential for inward views from nearby receptors.

ACCESS

- 1.66. The proposed haul route for the Proposed Development has been identified by considering the ability of the route to physically accommodate the required vehicles, in addition to the sensitivity of the routes to potential disruption by the movements of traffic to and from the Application Site.
- 1.67. The site will be accessed from Wood Lane which is unadopted. The junction of Kegworth Road and Wood Lane will require widening with a temporary surface area to ensure the largest construction vehicle can access the site. To facilitate this, 11m of hedgerow will need to be realigned. This temporary surface has been extended so that vehicles can safely wait at the junction as any traffic off Kegworth Road passes.
- 1.68. It is noted that Wood Lane is single lane width, however there are passing bays along this. The Applicant will investigate extending the width of any passing bay along Wood Lane, where possible. It is also proposed to extend the whole width of the road up the site entrance point to a maximum of 4.5m. There is space in the existing verge to extend the width of this road with a space of between 5 and 6m between hedgerows.
- 1.69. The haulage route will likely be from the M1 to the west of the Application Site. The delivery vehicles will exit the M1 at junction 24, signposted A453 Nottingham (S), onto the A453 and travel in a northeast direction for approximately 4.3km, before taking the exit onto West Leake Lane. This road will be travelled on in a southern direction for approximately 1.5km, before turning left onto Kegworth Road. Vehicles will travel northeast along this road for approximately 1.3km before turning right into Wood Lane where the site is accessed from.
- 1.70. It is worth noting that during the first phase of the design, two accesses were chosen to accommodate vehicles during the construction phase of the Proposed Development; Wood Lane to the north and Stocking Lane to the south. However, following consultation with Rushcliffe Borough Councils Right of Way (ROW) Officer, Mr James Hatchett, and the local community, it was determined that Stocking Lane should be removed from the design.
- 1.71. As part of the ROW Officers pre-application response dated 13.05.21, he noted the following:
“BW16 Stocking Lane forms the main access from East Leake and is used by the public constantly though out each day on foot, cycle and horseback. Its stone track surface is prone to erosion by vehicular traffic.”

- 1.72. Following the removal of the southern access track, it was proposed for Wood Lane to be widened to a maximum of 4.5m to accommodate the largest vehicles to manoeuvre into the Application Site. Following this design amendment, Mr Hatchett was consulted once again and he stated:

“I share your opinion/judgement that removing Stocking Lane from a potential haul route will be advantageous for your application, no doubt you have also gauged this from feedback you have received from BW users or residents.”

- 1.73. It should also be noted that widening of the entrance to Wood Lane, off of Kegworth Road is required to ensure suitable visibility splays are achieved. Consultation with Highways Development Control confirmed that speed surveys would be required if any reduction in the visibility splay from that of a 60mph road is to be considered. It was noted on the site visit that it was likely that vehicles would be travelling up to the roads speed limit and therefore the full 210m x 2.4m visibility splay for a 60mph road is required. This would be achievable with the realignment of 152m of hedgerow and the trimming of 11m of hedgerow. This is a significant increase on the existing visibility at this junction which is currently limited when exiting Wood Lane onto Kegworth Road and looking in a westerly direction. This is a benefit of the Proposed Development in that it will improve road safety in the local area; it was noted during consultation that serious accidents have been recorded in the vicinity of the junction due to a current lack of visibility.
- 1.74. A detailed Construction Traffic Management Plan (CTMP) has been prepared to demonstrate how the site will be accessed during the construction period (see **Volume 3, Technical Appendix 5**). The CTMP provides details of the number of deliveries during the construction period and also provides details of vehicle routing to access and exit the site.
- 1.75. Impacts from the operational phase of the site, consisting of between 10-15 LGVs per year for security and maintenance, is not considered to be significant.
- 1.76. The safety and convenience of residents and users of the PRoW network is a matter of paramount importance to the Applicant and therefore a number of health and safety measures have been proposed during the construction stage of the development. These have been outlined in more detail in the CTMP (**Technical Appendix 5, Vol 3**) and the PRoW Management Plan (**Technical Appendix 11, Vol 3**).

ENERGY STATEMENT

- 1.77. This section of the Planning Statement addresses the benefits of renewable energy developments and the need for such facilities in respect of national policy and energy strategies.
- 1.78. The Proposed Development aligns with the NPPF by contributing to the decarbonisation of electricity generation and hence, sustainable development. The development of the Proposed Development will mean a substantial reduction of approximately 25,000t³ of CO₂ emissions annually. This is based on multiplying the Proposed Development's average annual yield, by the number of tonnes of carbon which fossil fuels would have produced to generate the same amount of electricity. The figure for this is calculated using the BEIS "all fossil fuels" emissions statistic of 440 tonnes of carbon dioxide per gigawatt hour (GWh) of electricity. This represents a significant contribution to the legally binding national and international requirement and associated targets to increase renewable energy generation and reduce CO₂ emissions.
- 1.79. Based on BEIS average domestic household consumption per year at 3,748kWh, the Proposed Development can meet the energy needs of approximately 15,200 homes.
- 1.80. The most notable benefit of the Proposed Development is the support it will provide towards the Central Government's commitments to reduce emissions of greenhouse gas emissions to combat the effects of climate change.
- 1.81. Since 1990, the UK has reduced emissions by 44% whilst increasing GDP by 78%, the fastest decarbonisation rate in the G7² and in June 2019, the UK became the first major economy to set a legally binding target to reach net zero greenhouse gas emissions by 2050, in recognition of the transformative change needed to tackle global climate change.
- 1.82. Although significant progress towards this goal has already been made, the UK has far to go. The CCC published the Sixth Carbon Budget: The UK's Path to Net Zero³ on 9 December 2020 which sets out the actions needed to achieve net zero emissions. The CCC's recommended pathway, the *Balanced Net Zero Pathway* requires a 78% reduction in UK territorial emissions by 2035, a 63% reduction from 2019. Similarly, the International Energy Agency (IEA) recently released a roadmap to a global net-zero energy system by 2050⁴ stating that advanced economies such as the UK should target net-zero electricity generation by 2035, with Canada and the USA having already implemented such targets. UK Prime Minister Boris Johnson has since stated that it would be possible to end gas-fired electricity generation in the UK by

² [BEIS Outcome Delivery Plan: 2021 to 2022 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/86422/beis-outcome-delivery-plan-2021-to-2022.pdf)

³ [The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf](https://www.ccc.gov.uk/system/uploads/attachment_data/file/86422/the-sixth-carbon-budget-the-uks-path-to-net-zero.pdf)

⁴ [Net Zero by 2050: A Roadmap for the Global Energy Sector - Event - IEA](https://www.iea.org/press-releases/net-zero-by-2050-a-roadmap-for-the-global-energy-sector)

2035⁵; this would mean the entirety of the nation's electricity generation mix would be produced by renewable energy and low carbon technology, primarily onshore and offshore wind and solar power.

- 1.83. The Proposed Development will have an export capacity of up to 49.9MW; a solar farm of this size will generate a significant amount of electricity from renewable sources, therefore offsetting the need for power generation from the combustion of fossil fuels including coal and oil. Consequently, during its operational lifespan (40 years), the Proposed Development has the potential to displace electricity generated from fossil fuels and consequently represents carbon savings.
- 1.84. The Proposed Development will mean a substantial reduction of approximately 25,000t³ of CO₂ emissions annually. This is based on multiplying the Proposed Developments average annual yield⁶, multiplied by the number of tonnes of carbon which fossil fuels would have produced to generate the same amount of electricity. This represents a significant contribution to the legally binding national and international requirement and associated targets to increase renewable energy generation and reduce CO₂ emissions.
- 1.85. The amount of CO₂ savings depends on which source of electricity generation the solar farm generating capacity is displacing at any given time. A renewable energy development would have a maximum potential to save carbon emissions when substituting coal fired generation. However, it is not appropriate to define the electricity source for which this renewable electricity project would substitute due to uncertainty in the future grid mix. As a result, the figure used for calculating the level of CO₂ offset as a result of the introduction of the Proposed Development, is the BEIS "all fossil fuels" emissions statistic of 440 tonnes of carbon dioxide per gigawatt hour (GWh) of electricity⁷.
- 1.86. Scaling this up to the CO₂ displaced over the lifetime of the Proposed Development (40 years), circa 1,000,000t³ of CO₂ will be displaced. This represents a significant contribution to the legally binding national and international requirement and associated targets to increase renewable energy generation and reduce CO₂ emissions.

Table 2: Estimated prevention of emissions in tonnes of CO₂.

Estimated Prevention of Emissions in CO ₂ (tonnes)	
Annual	Solar Farm Lifetime (40 years)
25,000t ³	1,000,000t ³

- 1.87. Using the "all fossil fuels" emission statistic is current industry standard and is considered an accurate depiction of calculating CO₂ savings when introducing renewable energy schemes as the emphasis of introducing renewable technology is to replace fossil fuels and combat CO₂

⁵ [UK Government eyeing 100% clean energy grid by 2035, Boris Johnson confirms \(edie.net\)](#)

⁶ Average annual yield of 57GWh/year (taking into account degradation across the lifetime of the project)

⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/946968/sub-national-electricity-and-gas-consumption-summary-report-2019.pdf

levels and not to replace other renewables. It is considered that using the “coal” emission statistic would give the worst-case scenario comparator for calculating carbon savings.

- 1.88. Based on BEIS average domestic household consumption per year, 3,748kWh⁸, the Proposed Development can meet the energy needs of approximately 15,200⁹ homes. The generation of this level of renewable energy therefore represents a substantial benefit which would be experienced if planning permission were to be granted.
- 1.89. In addition, the operation of the Proposed Development could, based on the same assumptions, also displace other gases related to coal-fired electricity generation including those associated with acid rain such as sulphur dioxide (SO₂) and oxides of nitrogen (NO_x).
- 1.90. It should be noted that there are significant increases in output and efficiency yearly in solar panels; today's average commercial solar panel converts over 20% of the light energy hitting it to electricity, up from 12% just 10 years ago¹⁰. Furthermore, it is expected that panels will be even more efficient at the time of construction of the solar farm, if consented (earliest construction is early 2023).
- 1.91. A recent study published in Nature Energy by Dr Gunnar Luderer identified that *'building solar creates an insignificant carbon footprint compared with savings from avoiding fossil fuels'*.¹¹ The study measures the full lifecycle greenhouse gas emissions of a range of sources of electricity out to 2050. The footprint of solar comes in at 6gCO₂e/kWh. In contrast, coal CCS (109g), gas CCS (78g), hydro (97g) and bioenergy (98g) have relatively high emissions, compared to a global average target for a 2C world of 15gCO₂e/kWh in 2050.
- 1.92. A review of policy within the **Planning Policy Context** and **Material Considerations** sections above indicates that there is a clear need to ensure security of supply through the development of a diverse energy generation system.

CONCLUSION

- 1.93. This Design and Access Statement has been prepared in accordance with requirements of Article 9 of the DMPO and the NPPG. The DAS has established:
- The design principles and rationale that have been applied to the Proposed Development, including the various relevant environmental and technical criteria;
 - The steps taken to appraise the context of the Application Site, and how the design of the Proposed Development takes that context into account, in respect of design

⁸ [Sub national electricity and gas consumption summary report 2020 \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/84444/sub-national-electricity-and-gas-consumption-summary-report-2020.pdf)

⁹ Based on average annual yield of 57GWh/3,748kWh per household.

¹⁰ [A breakthrough approaches for solar power - BBC News](https://www.bbc.com/news/technology-55444444)

¹¹ <https://www.carbonbrief.org/solar-wind-nuclear-amazingly-low-carbon-footprints>

iteration, the various relevant environmental and technical criteria, and each design component;

- The relevant planning policies in respect of access, and how these policies have been taken into account and are addressed; and
- That all relevant issues which might affect access to the Proposed Development have been addressed.

1.94. The DAS has thus established that the Applicant can demonstrate an integrated approach that will deliver inclusive design and address the full range of access requirements throughout the design process.

1.95. It is considered that due to the benign appearance of the scheme and the natural screening afforded to the site, that the development proposals will not have an unacceptable adverse effect on the visual or amenity value of the wider countryside. The site and extent of development have been carefully selected. It is naturally screened and supplemented by additional planting which, coupled with the low-profile physical height of the solar panels and associated equipment, helps minimise views of the Proposed Development

1.96. Safe access can be taken into the site from the public highway and within the site. Mitigation measures will be employed to ensure construction traffic is managed appropriately as outlined within the accompanying CTMP (TA 5, Vol 3).

1.97. Overall, the development proposals are appropriate in terms of design and access and the development clearly represents a necessary step towards meeting the UK's legally binding climate change and renewable energy obligations. It is therefore considered that the application be supported, and planning permission granted.