



# OAKLANDS FARM SOLAR PARK

Applicant: Oaklands Farm Solar Ltd

Environmental Statement

Chapter 16 – Other Issues

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# Oaklands Farm Solar Park - Environmental Statement Volume 1

## Chapter 16: Other Issues

**Final Report**  
Prepared by LUC  
January 2024

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# Chapter 16

## Other Issues

### Introduction

**16.1** This chapter collates the assessment of other environmental topics, where consultees have requested their inclusion in the ES, but no likely significant effects were predicted at the Scoping stage and as such a proportionate approach to assessment has been taken to demonstrate this.

**16.2** This chapter considers the potential effects of the Proposed Development on the following topics:

- Major accidents and disasters.
- Air quality (construction).
- Waste.
- Human health.
- Telecommunications and utilities.

**16.3** The Planning Inspectorate (PINS) agreed that electromagnetic interference could be scoped out of the Environmental Impact Assessment (EIA) (see **Table 16.1**).

**16.4** Where relevant, baseline conditions, assessment methodology and mitigation measures are outlined for each topic. This chapter has been prepared by LUC, informed by specialist input from Air Quality Assessments Ltd and Cairn Risk Ltd.

**16.5** The following figures and appendices are referred to throughout this chapter:

- **Figure 16.1: Existing Utilities and Infrastructure Identified during Consultation**
- **Appendix 16.1: Air Quality Assessment**
- **Appendix 16.2: Utility Search Report**

## Consultation

**16.6 Table 16.1** below provides details of consultation in relation to the topics listed above, which have been considered within this chapter. Responses from utilities operators/providers are set out in **Table 16.10**.

**Table 16.1: Consultation Responses**

Consultee and Date	Issue Raised	Response/Action Taken
Planning Inspectorate Scoping response September 2021	PINS do not agree with the scoping out of human health on the basis that there is uncertainty with regards to the potential effects that may be experienced due to noise, transport and effects on residential amenity.	Human Health effects in relation to residential amenity, noise and transport have been considered in the following chapters of this Environmental Statement (ES)  <b>Chapter 5: Landscape and Visual.</b> <b>Chapter 10: Transport and Access.</b> <b>Chapter 11: Noise.</b> <b>Chapter 16: Other issues</b> (this Chapter).
	PINS agree with the scoping out of electric, magnetic and electromagnetic fields.	Noted. Guidelines published by International Commission on Non-Ionizing Radiation Protection (ICNIRP) in 1998 for both occupational and public exposure states that <i>“overhead power lines at voltages up to and including 13 kV, underground cables at voltages up to and including 132kV and substations at and beyond the publicly accessible perimeter”</i> are not capable of exceeding the ICNURP exposure guidelines. As such, no assessment is required for the proposed infrastructure or cables, which are under 132kV.

Consultee and Date	Issue Raised	Response/Action Taken
	<p>PINS do not agree to scope out major accidents and disasters. The ES should identify potential major events which are relevant to the Proposed Development such as severe weather events - storms, floods; accidents such as fire risk; and transport accidents – road and rail.</p>	<p>Consideration of these issues is provided in this Chapter from paragraph 16.7, and <b>Chapter 10: Transport and Access</b>.</p>
	<p>Advised the ES should include a description and assessment (where relevant) of the likely significant effects resulting from accidents and disasters applicable to the Proposed Development, such as battery storage fire hazards. The Applicant should make use of appropriate guidance (e.g. that referenced in the Health and Safety Executives (HSE) Annex to the Inspectorate’s Advice Note 11) to better understand the likelihood of an occurrence and the Proposed Development’s susceptibility to potential major accidents and hazards. The description and assessment should consider the vulnerability of the Proposed Development to a potential accident or disaster and also the Proposed Development’s potential to cause an accident or disaster. The assessment should specifically assess significant effects resulting from the risks to human health, cultural heritage or the environment. Any measures that will be employed to prevent and control significant effects should be presented in the ES.</p>	<p>This is provided in this Chapter, from paragraph 16.7. Fire risk to human health and the environment has been assessed. There are no heritage assets close enough to the Site that could be affected if a fire were to break out (see <b>Figure 7.1.1</b> in <b>Appendix 7.1 - Historic Environment Assessment</b> which contains figures showing the location of heritage assets). As such this has been scoped out.</p>
	<p>In the absence of more detailed information or evidence demonstrating clear agreement with relevant stakeholders,</p>	<p>This topic is considered in this Chapter from paragraph 16.142.</p>



Consultee and Date	Issue Raised	Response/Action Taken
	PINS is not in a position to agree to scope out telecommunication, television and reception from the assessment at this stage.	
	It should be clear how the results of the desk study and consultation have informed the layout of the Proposed Development. Should any diversions of utility or telecommunications infrastructure be required, these should be described in the ES and any resultant likely significant effects should be assessed.	This topic is considered in this Chapter from paragraph 16.142.
	Advised that the ES must include “ <i>an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.</i> ” The ES must also assess how battery waste would be managed in the decommissioning phase.	This topic is considered in this chapter from paragraph 16.76 and within <b>Appendix 4.3: Outline Construction Environmental Management Plan (CEMP)</b> and <b>Appendix 4.6 Battery Storage Safety Management Plan</b> .
	Noted the Scoping Report provides little information regarding the number of vehicles which will access the site during the construction phase and it is therefore uncertain whether the proposed development is likely to exceed relevant air quality assessment threshold criteria. On this basis, PINS is not able to scope out an assessment of emissions from construction traffic at this time.	An assessment of emissions from construction traffic is provided in <b>Appendix 16.1: Air Quality Assessment</b> , with a summary of the assessment in this Chapter from paragraph 16.40.

Consultee and Date	Issue Raised	Response/Action Taken
	<p>The ES should provide information to explain the locations of AQMAs relative to the Proposed Development and any potential impacts the Proposed Development may have on them, for example, proposed routes of construction traffic.</p>	<p>Details on the relevant AQMAs and any potential impacts caused by the Proposed Development are provided in <b>Appendix 16.1: Air Quality Assessment</b>. Further details on the proposed routes for construction traffic can be found in <b>Chapter 10: Transport and Access</b>.</p>
	<p>The ES should detail the specific measures proposed to manage dust and emissions during construction and decommissioning of the Proposed Development, particularly in relation to the control of dust on any adjacent sensitive receptors including designated ecological sites.</p>	<p>Mitigation measures to manage dust emissions during the construction phase are detailed in <b>Appendix 16.1: Air Quality Assessment</b> and set out in the outline CEMP in <b>Appendix 4.3: Outline Construction Environmental Management Plan</b>.</p>
<p>Public Health England          (response within Scoping Opinion)          17<sup>th</sup> September 2021</p>	<p>We believe the summation of relevant issues into a specific section of the report on human health provides a focus which ensures that public health is given adequate consideration. The section should summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health. Compliance with the requirements of National Policy Statements and relevant guidance and standards should also be highlighted.</p> <p>Any assessments undertaken to inform the ES should be proportionate to the potential impacts of the proposal, therefore we accept that, in some circumstances particular assessments may not be relevant to an application, or that an assessment may be adequately completed using a qualitative</p>	<p>This Chapter includes a specific section on human health from paragraph 16.105 and sets out the relevant impacts that could affect human health. It provides a proportionate qualitative assessment taking account of the characteristics of the Proposed Development and its likely effects on the environment and on people.</p>

Consultee and Date	Issue Raised	Response/Action Taken
	rather than quantitative methodology. In cases where this decision is made, the Applicant should fully explain and justify their rationale in the submitted documentation.	
Drakelow Parish scoping response 25 <sup>th</sup> August 2021	Major accidents and disasters should not be scoped out of the ES because the Proposed Development will be designed and maintained to H&S Standards, this should be recorded in the ES and explain how this will be achieved.	Details of this are provided in this Chapter from paragraph 16.7.
	Noted the Applicant proposed to avoid any effect on telecommunication through the design of the Proposed Development. DP request the details of the design are included in the ES and telecommunications is not scoped out.	Consultation with relevant consultees has been undertaken with regards to telecommunications and this is presented in this Chapter from paragraph 16.142.
	Note there are other solar farms proposed in their locality and would advise that these proposals are considered in addition to the Proposed Development in relation to telecommunications.	None of the telecommunications companies being consulted have raised any cumulative issues with other solar farms in the area.

Consultee and Date	Issue Raised	Response/Action Taken
Health and Safety Executive (HSE)	Scoping response 08/09/21 - Advised the proposed application boundary is not within any consultation zones of any major accident hazard sites or major accident pipelines.	Noted.
	<p>Response to the PEIR 26/05/22 - Confirmed the Proposed Development is not within any consultation zones of major accident hazard sites or major accident hazard pipelines.</p> <p>Noted there is a limited consideration of risk assessments arising from the Proposed Development's vulnerability to major accidents and advised this is considered further in line with Advice Note 11 Annex on the Planning Inspectorate's website - Annex G.</p>	This has been considered in more detail in this Chapter from paragraph 16.105.
National Highways (NH)	Response to scoping 09/09/21 - Adverse change to noise and air quality should be particularly considered, including in relation to compliance with the European air quality limit values and/or in local authority designated Air Quality Management Areas (AQMAs).	Issues related to air quality are considered in this Chapter from paragraph 16.40 and in <b>Appendix 16.1: Air Quality Assessment</b> . Noise is considered in <b>Chapter 11: Noise</b> .

Consultee and Date	Issue Raised	Response/Action Taken
<p>Rosliston Parish Council (RPC) Walton-on-Trent Parish Council (WTPC)  Response to scoping 16<sup>th</sup> and 17<sup>th</sup> September 2021</p>	<p>Advised major accidents and disasters, human health, telecommunication, television reception and utilities, waste and air quality need to be within the scope of the review given the scale of the site/construction.</p>	<p>These topics have been considered in this Chapter.</p>
<p>South Derbyshire District Council  Response to scoping 07/09/21 and joint response to the PEIR with Derbyshire County Council 06/06/22</p>	<p>Agree to scoping out of the following topics, as explained in Chapter 10 - Glint and Glare; Major Accidents and Disasters; Human Health; Ground Conditions; Hydrology; Telecommunications, Television Reception and Utilities; Waste; and Air Quality.</p>	<p>Further to the Scoping Opinion from PINS, major accidents and disasters, human health, air quality, waste and telecommunications, television reception and utilities are considered in this chapter, whilst the remaining topics have been assessed in the following chapters of the ES:</p> <p><b>Chapter 8: Water Resources and Flood Risk.</b> <b>Chapter 9: Ground Conditions.</b> <b>Chapter 14: Glint and Glare.</b></p>
<p>Barton under Needwood Parish Council Response to Targeted</p>	<p>Is there likely to be any issues regarding security fencing and any light pollution? We are aware of a solar farm at Tutbury, for example, which seems to use drones for surveillance purposes. Will that be the case in this location?</p>	<p>All security monitoring will be via CCTV. Drones are not proposed. Further information on security measures is provided in <b>Chapter 4: Project</b></p>

Consultee and Date	Issue Raised	Response/Action Taken
Consultation 03/04/23		<b>Description</b> and assessed in <b>Chapter 16: Other Issues.</b>
DCC Emergency Planning Department Response to enquiry from LUC 11/07/23	Requested the Applicant liaise with Derbyshire Fire & Rescue.	LUC asked DCC Emergency Planning for any further comments on the Proposed Development. Response not yet received. Derbyshire Fire & Rescue have been consulted.  An Outline Battery Safety Management Plan ( <b>Appendix 4.6</b> ) has been prepared which will be shared and agreed with Derbyshire Fire & Rescue. The Applicant will also provide an Emergency Response Plan as part of pre-construction consultation and discharge of DCO Requirements.
Derbyshire Fire and Rescue Authority	Response to Scoping 31/08/21 - No objections or comments to make on the proposal subject to a separate Building Regulation Consultation being submitted.	Building Regulation Consultation will be undertaken post-consent.
	General response 07/08/23 – Derbyshire Fire and Rescue Authority (DFRA) confirmed reference should be made to the current version of Approved Document B vol 2 Buildings other than dwellinghouses section B5 – access and facilities for the fire service.	An Outline Battery Storage Safety Management Plan (OBSSMP) has been included at <b>Appendix 4.6</b> . The Site has suitable access for HGVs which will also be able to accommodate fire service vehicles if required. In accordance with updated guidance shared by DFRA, the Site design includes provision of

Consultee and Date	Issue Raised	Response/Action Taken
		significant fire-water storage and containment to respond to battery fire incident. The Outline Operational Environmental Management Plan (OEMP) ( <b>Appendix 4.4</b> ) states that an Emergency Response Plan will be produced for the Site. This will be secured through the DCO.

# Major Accidents and Disasters

## Introduction

**16.7** In accordance with the latest Institute for Environmental Management and Assessment (IEMA) guidance<sup>1</sup>, many events could be classified as a 'major accident or disaster', that could cause significant effects on the environment but these are not all relevant to the Proposed Development or its location. Where impacts assessed in the EIA could be deemed to cause a major accident or disaster, these are assessed in the relevant topic chapters. This relates primarily to road traffic accidents occurring during the Proposed Development's construction, which have been assessed as part of **Chapter 10: Transport and Access**. This chapter assesses the potential for the Proposed Development to be affected by, and also cause, a major accident or disaster.

## Assessment Methodology

**16.8** Although 'accident', 'risk' and 'disaster' are well known terms and are used in everyday language, there is potential for their meaning to be interpreted differently. IEMA's Major Accidents and Disasters in EIA: A Primer (2020, 'the Primer') provides definitions for these in an EIA context.

**16.9** The Primer defines 'major accidents' as:

*"Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events".*

**16.10** The Primer's definition of 'disaster' is:

*"May be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident".*

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<sup>1</sup> IEMA (2020) Major Accidents and Disasters in EIA: A Primer



**16.11** Risk is defined in this Primer as:

*“The likelihood of an impact occurring, combined with the effect or consequence(s) of the impact on a receptor if it does occur.”*

**16.12** Two categories of effect are identified for the purposes of this assessment: ‘significant’ or ‘not significant’; there are no degrees of effect identified, as any residual risk of a major accident or disaster is considered to be ‘significant’. All effects are considered to be adverse.

**16.13** Significant environmental effect (in relation to a major accidents and/or disasters assessment) is defined in the Primer as:

*“Could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration”.*

**16.14** The duration of effects is highlighted in the definition and is therefore considered within this assessment.

**16.15** The assessment considers the following scenarios:

- Potential for the Proposed Development to be affected by a major accident or disaster.
- Potential for the Proposed Development to cause major accidents and disasters.

**16.16** An exercise was undertaken, in consultation with the National Risk Register<sup>2</sup> and the Proposed Development’s HAZID risk assessment to identify a shortlist of possible major accidents or disasters that could be relevant to the Scheme:

- Aircraft disasters due to effects of glint and glare – See **Chapter 14: Glint and Glare** – effects are minor adverse and not significant.
- Criminal activity/risks of sabotage which results in fire – assessed below.
- Fire risk to local residents, habitats and species – assessed below and see **Appendix 4.6: Outline Battery Storage Safety Management Plan** and **Appendix 4.3: Outline Construction Environmental Management Plan**.

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<sup>2</sup> HM Government (2023) National Risk Register

- Flooding – see **Chapter 8: Water Resources and Flood Risk** – effects are negligible and not significant.
- Health and safety risks to staff and the general public – assessed below.
- Road safety – see **Chapter 10: Transport and Access** – effects are negligible to slight and not significant.
- Road accidents due to effects of glint and glare - See **Chapter 14: Glint and Glare** - effects are negligible and not significant following implementation of screening.
- Utilities failure due to construction effects – assessed below in the Telecommunications section of this chapter.

## Baseline conditions

**16.17** Receptors which are considered as potential receptors for effects from major accidents or disasters are:

- Occupants of nearby villages – Rosliston, Walton-on-Trent and Coton in the Elms.
- Residents of farms/properties outside the main villages – shown on **Figure 5.9: Property Locations within 0.25km**, including new residents occupying the housing development at Drakelow Park.
- Drivers and cyclists using local roads that run through and around the Site.
- Users of public rights of way which run through the Site (Cross Britain Way) and in close proximity (see **Figure 12.1: Recreation and Tourism Receptors**).
- Underground infrastructure services including electricity, water, communications, and gas (see **Figure 16.1**).
- Construction and operational staff on Site.

**16.18** The future baseline in the absence of the Proposed Development is likely to remain largely the same, although the number of receptors at Drakelow Park will increase as the development nears completion and more homes are occupied. Other housing developments in the area will increase the number of people in the vicinity of the Site who could be affected.

**16.19** The effects of climate change could increase the vulnerability of the local population to the effects of major accidents and disasters, for example increased fire risk with hotter, drier weather; but this is considered to remain a low risk.

## Assessment of Effects

### Potential for the Proposed Development to be Affected by a Major Accident or Disaster

#### Criminal Activity

**16.20** Instances of theft of copper wiring and other materials and equipment have been reported at solar farms globally. Unauthorised access has the potential to result in fire if persons are intent on damage/sabotage. To prevent unauthorised access, during all stages of the Proposed Development the Site will be suitably secure to protect from criminal damage. This includes secure fencing and gated entrances, CCTV and remote monitoring, and lighting of critical areas<sup>3</sup>. On site staff during all phases will also act as a deterrent to criminal activity. As such there will be no significant effects as a result of criminal activity.

### Potential for the Proposed Development to Cause Major Accidents and Disasters

#### Fire Risk

**16.21** The risk of fire during construction and decommissioning will be mitigated through suitable measures included within the CEMP.

**16.22** During operation there is a potential risk of fire associated with the following equipment: the battery cells used in the Battery Energy Storage Systems (BESS), transformers containing oil, electrical cabling and components, fuels and flammable liquids stored onsite for maintenance and operations, and solar panels. The majority of these constitute standard fire hazards associated with industrial developments which will be captured in the CEMP (**Appendix 4.3**) and OEMP (**Appendix 4.4**), but the fire hazard with the greatest potential

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<sup>3</sup> Secured within the CEMP, OEMP and DEMP

impact is the BESS, which is located approximately 650m from the closest residential property at Oaklands Farm. This position within the middle of the Site reduces the likelihood of nearby properties being affected by fire.

**16.23** An Outline Battery Storage Safety Management Plan (OBSSMP) has been prepared (see **Appendix 4.6**) and its implementation will be secured by a requirement of the DCO. The OBSSMP sets out the risks associated with fires from BESS equipment and identifies how risks can be minimised including:

- To identify and prevent battery fire or ‘thermal runaway’ conditions from developing, the first defence is internal fire detection and suppression systems built into each battery container. This can consist of water or aerosol-based sprinkler or misting systems, which form part of the standard component of a BESS facility, along with smart sensors connected to automated shut-down systems, in the event of overheating, or the appearance of faults.
- The next level of protection is to ensure suitable separation distances between battery units to prevent the spread of fire or heat from an affected unit to those surrounding it, while also allowing emergency access and escape to aid a safe response.
- 24-hour remote surveillance of the BESS to ensure quick response times to potential fires and secure fencing with CCTV to restrict access to authorised personnel only.
- The battery energy storage facility can be easily accessed by emergency vehicles in the event of a fire as the access tracks will be of an adequate size for HGVs and therefore also fire engines.
- An additional layer of protection is the provision of significant quantities of water within the BESS compound to douse and cool any battery units at risk of overheating and going into thermal runaway (this is in addition to the fire suppression system built into each battery container).
- To prevent risks to environment from contaminated fire water, there will be a drainage system installed in the sub-base of the BESS compound and the Proposed Development’s substation area that will drain to an underground tank or Sustainable Drainage System (SuDS) pond with shut-off and separating capabilities for containment and testing of water prior to discharge or removal.

- Regular monitoring and maintenance of BESS equipment will assist with detecting faults and ensure optimal operation of the system.

**16.24** In addition to the above, and to comply with requirements in National Planning Practice Guidance *Renewable and low carbon energy*<sup>4</sup> and guidance from the National Fire Chiefs Council<sup>5</sup> an Emergency Response Plan and a Fire Service Site Specific Risk Assessment will be produced for the Site. This will be secured through the OEMP (**Appendix 4.4**), the implementation of which is secured via a Requirement to the DCO. The Emergency Response Plan will include contact details for emergency services and other key responders; identify a Suitably Authorised Person to isolate the batteries before any firefighting can begin; indicate escape routes and the location of firefighting equipment on site; and will include a firefighting strategy. Derbyshire Fire and Rescue will be consulted on the final Emergency Response Plan prior to construction commencing.

**16.25** Overall, it is considered that there is a very low risk of the Proposed Development resulting in a major accident or disaster as a result of the BESS, or other potential fire sources.

**16.26** In conclusion, taking account of the potential hazards and risks described above, and the measures which will be put in place to avoid and minimise these, it is predicted that the Proposed Development will not give rise to a major accident and/or disaster that will result in significant effects during either the construction or operational phase. No significant effects are predicted.

## Health and Safety

**16.27** All components of the Proposed Development will be designed and manufactured to meet all appropriate up to date international engineering design, manufacturing, operational and maintenance safety standards.

**16.28** The Proposed Development, including all construction and operation activities, will comply with all relevant UK legislation including:

- The Health and Safety at Work etc. Act 1974.

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<sup>4</sup> HM Government (2015, updated 2023), Guidance - Renewable and low carbon energy.

<sup>5</sup> National Fire Chiefs Council (no date) Grid Scale Battery Energy Storage System planning – Guidance for FRS. Available at: <https://www.ukfrs.com/sites/default/files/2023-04/Grid%20Scale%20Battery%20Energy%20Storage%20System%20planning%20Guidance%20for%20FRS.pdf>

- The Construction (Design & Management) Regulations 2015.
- The Management of Health & Safety at Work Regulations 1999.
- The Waste Batteries and Accumulators Regulations 2009.

**16.29** The CEMP, OEMP and DEMP all contain measures to ensure the health and safety of workers. All staff and contractors working on the construction of the Proposed Development will be required to comply with the safety procedures set out in these management plans.

**16.30** To ensure hazards are appropriately managed, a risk assessment will be undertaken for all major construction activities, with measures put in place to manage any hazards identified. For example, appropriate on-site management of construction vehicles to avoid accidents or injury.

**16.31** Security fencing will be erected around the Proposed Development boundary during construction. In addition, more robust palisade fencing will be erected around the Proposed Development's substation compound and BESS, and CCTV will be installed on metal masts up to 3.5m in height for additional safety and security.

**16.32** Existing electricity transmission and distribution lines which pass through the Site present a risk including the potential for construction vehicles (cranes etc.) to collide with the power lines and pylons collapsing on the solar PV panels. Exclusion zones agreed in consultation with network operators either side of overhead and underground lines have been maintained to allow access to the pylons by network maintenance teams, while providing suitable construction access for the safe use of tall solar construction equipment.

**16.33** The presence of the underground 132kV cable connecting the Proposed Development's substation with the National Grid Drakelow substation could also pose a risk if landowners decide to carry out intrusive works in the future. This will be mitigated with the use of typical safety measures for underground utility installations such as burying assets below plough depth (typically 900mm below surface), signposting of the cable route on the surface with poles/markers, underground markers such as tiles and safety tape placed above cabling to alert workers during excavations, and information provided to the landowner highlighting the risk of impacting the underground cable which can be shared with future landowners. Land agreements will include plans showing the approximate routing of the installed cabling, and title

updated to reflect the easement(s) to ensure any parties who may acquire the land in the future will be aware of the asset's location.

**16.34** As detailed in **Chapter 12: Socio-economics, Tourism and Recreation** the Cross Britain Way crosses the north of the Oaklands Farm area. To facilitate the construction of a small section of the proposed access track, banks men will monitor the Cross Britain Way and ensure users cross the construction works area safely. There will be no closure of the Public Right of Way (PRoW).

**16.35** Following the construction of the access tracks, users of the Cross Britain Way will be able to cross the access tracks without the need for banksmen, as signage, gates and fencing will be in place to prevent unauthorised access to the Site via the access tracks. If a vehicle needs to cross the PRoW, suitable warning signage and a site operative will ensure construction traffic will not conflict with PRoW users. A strict speed limit of 15 miles per hour (mph) on surfaced and 10 mph on unsurfaced haul roads and work areas will also be implemented on site during the construction works.

**16.36** Once operational, the Proposed Development will not impact the ability of the public to access the PRoW. Any permanent gates which provide access into the Proposed Development will be kept locked and used by authorised personnel only. The proposed new permissive path (for walking only) will only be usable by members of the public once construction on the Site is complete, to avoid the potential for conflicts between construction activities and users on the new path.

**16.37** Measures to control noise and dust are set out in the CEMP to protect PRoW users from experiencing adverse noise and dust effects. This will be secured through a DCO requirement. This will include use of water-assisted dust sweepers to reduce dust from vehicles accessing and egressing the Site, locating dust causing activities away from sensitive receptors, and removing materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. In terms of noise, equipment choice will be driven by noise considerations, with the use of equipment silencers or mufflers considered if necessary. Noisy equipment and operations are to be located away from noise sensitive receptors where possible. Plant and equipment will be regularly maintained to reduce noise effects and set construction working hours will help to limit noise effects on neighbours.

**16.38** Given the measures outlined above, it is concluded that the risk to human health and safety, both to construction workers, users of the PRow network and local residents, is low and not significant during the construction and operational phase.

## Cumulative Effects

**16.39** The shortlisted cumulative schemes identified in **Chapter 2: The Environmental Impact Assessment**, which are considered most likely to contribute towards or be affected by cumulative effects include battery energy storage, solar energy, a renewable energy centre, an energy recovery centre, and residential development. All these schemes will have had to undertake their own risk assessments and have plans in place to avoid, reduce and manage potential major accidents and disasters. As such significant cumulative effects are not considered likely.

## Air Quality

**16.40** An air quality assessment has been undertaken by Air Quality Assessments Ltd. This assessment considers the effects of dust and particulate matter during construction and emissions from transport (nitrogen dioxide and fine particulate matter).

## Assessment Methodology

### Construction Dust

**16.41** A construction dust risk assessment has been undertaken following the methodology in the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction<sup>6</sup>.

**16.42** The guidance divides activities on construction sites into four main types: demolition, earthworks, construction and trackout. The methodology is based on a sequence of steps:

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<sup>6</sup> IAQM (2023) Guidance on the Assessment of Dust from Demolition and Construction v2.1



- Step 1 screens the requirement for more detailed assessment; if there are no receptors within 350 m of the site boundary, or within 50 m of roads used by construction vehicles, then there is no need for further assessment.
- Step 2 assesses the risk of dust impacts from each of the four activities, considering the scale and magnitude of the works (Step 2A), and the sensitivity of the area (Step 2B). Site-specific mitigation for each of the four activities is then determined based on a dust risk category defined at Step 2C. Appendix A1 within **Appendix 16.1: Air Quality Assessment** sets out the construction dust assessment methodology in more detail.

**16.43** The IAQM construction dust assessment methodology ensures that, with appropriate mitigation in place, the residual effect from construction dust will normally be ‘not significant’. Therefore, the assessment has been used to determine an appropriate level of mitigation for the construction phase.

### Road Traffic - Health

**16.44** Guidance for air quality and planning officers within local authorities, and developers and consultants involved in air quality assessments, has been published by Environmental Protection UK (EPUK) and the IAQM<sup>7</sup>. The guidance sets out criteria to help establish when an air quality assessment of impacts on health is likely to be considered necessary.

**16.45** For impacts of existing air quality in new development, the requirement for an assessment should be based on professional judgement, taking into account:

- The background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives.
- The presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded.
- The presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO<sub>2</sub>), that would cause unacceptably high exposure for users of the new development.

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<sup>7</sup> EPUK and IAQM (2017) Land-Use Planning & Development Control: Planning for Air Quality v1.2.

- The presence of a source of odour and/or dust that may affect amenity for future occupants of the development.

**16.46** For impacts of development on the local area, a two-stage approach is suggested, with the first stage intended to screen out small developments, and developments considered likely to have insignificant air quality effects. The full criteria are shown in Appendix A1 within **Appendix 16.1: Air Quality Assessment**.

**16.47** A qualitative assessment of the air quality impacts associated with the Proposed Development has been undertaken based on the scale of the Proposed Development, the distance of the Proposed Development from emissions sources and the existing air quality. The criteria in the EPUK/IAQM guidance and professional judgement have been used to screen the requirement for a full air quality assessment, with the professional experience of the author set out in Appendix A3 within **Appendix 16.1: Air Quality Assessment**.

## Baseline Conditions

**16.48** Information on existing air quality within the study area has been collated from the following sources:

- The results of monitoring and the most recent publicly available Air Quality Annual Status Report (ASR) published by South Derbyshire District Council (SDDC)<sup>8</sup>.
- Background pollutant concentration maps published by Defra<sup>9</sup>.

## LAQM Review and Assessment

**16.49** No Air Quality Management Areas (AQMAs) have been declared by SDDC but there are 2 in the vicinity of Stapenhill and Burton-Upon-Trent within East Staffordshire. It is highly unlikely concentrations of NO<sub>2</sub>, PM<sub>10</sub> or PM<sub>2.5</sub> exceed the objectives at any location where there is relevant exposure in South Derbyshire.

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<sup>8</sup> South Derbyshire District Council (2022) 2022 Air Quality Annual Status Report

<sup>9</sup> Defra (2022) Local Air Quality Management (LAQM) Support. Available at <http://laqm.defra.gov.uk/> [Accessed 29/09/23]

## Local Air Quality Monitoring

**16.50** No automatic monitoring has been undertaken by SDDC, however, an NO<sub>2</sub> diffusion tube monitoring network does operate in the local area. Data from monitoring sites located within 5km of the Site are shown in **Table 16.2**, with the monitoring locations shown in Figure 1 of **Appendix 16.1: Air Quality Assessment**.

**16.51** No exceedances of the annual mean NO<sub>2</sub> objective have been measured between 2017 and 2021 and concentrations ranged between 9.2-35.4 µg/m<sup>3</sup>.

**16.52** Concentrations measured in 2020 and 2021 would have been affected by travel restrictions brought in to control the Covid-19 epidemic and may not be representative of usual conditions.

**Table 16.2: Measured Annual Mean NO<sub>2</sub> Concentrations**

ID	Location	Type	Annual Mean (µg/m <sup>3</sup> )				
			2017	2018	2019	2020	2021
SDDC3	Community Centre	Urban	15.5	12.3	11.3	9.2	9.6
SDDC7	Lullington Road	Roadside	28.0	26.0	23.3	19.8	19.9
SDDC8	Lullington Road	Roadside	28.9	25.2	23.5	19.8	22.1
SDDC9	Woodland Road	Roadside	30.7	32.9	32.3	24.8	26.1
SDDC10	Burton Road	Kerbside	35.4	31.8	29.0	24.8	27.7
SDDC19	Church Street	Roadside	28.3	20.7	20.7	17.0	17.4
<b>Objective</b>			<b>40</b>				

## Background Concentrations

**16.53** Estimated background concentrations at the Site, obtained from the national maps published by Defra, are shown in **Table 16.3**. The background concentrations are well below the objectives/standards.

**Table 16.3: Estimated Annual Mean Background Concentrations ( $\mu\text{g}/\text{m}^3$ )**

Year	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2023	7.0-10.3	11.1-13.1	7.1-7.5
<b>Objective/Standard</b>	<b>40</b>	<b>40</b>	<b>20</b>

## Assessment of Effects

### Construction

**16.54** Without mitigation, there is a risk that the construction phase of the Proposed Development will lead to dust soiling and elevated concentrations of PM<sub>10</sub>. These impacts may occur during demolition, earthworks and construction, as well as from track-out of dust onto the public highway, as vehicles leave the construction site.

**16.55** There are no sensitive ecological receptors<sup>10</sup> within 50m of construction activities and the effects of construction on ecology will not be considered further.

### Dust

#### Potential Dust Emission Magnitude

**16.56** There will be no demolition at the Site; therefore, the impacts due to dust during demolition will not be considered further.

**16.57** The total area of the Site is approximately 191ha; however, any disturbance of the soil during installation of the solar panels, which would cover approximately 135ha, would be minimal. Some earthworks would be required during the preparation of the land for the access roads, substation and battery infrastructure and the total area affected would be around 93,000m<sup>2</sup>. Based on the example definitions in Table A1 of Appendix A1 (see **Appendix 16.1: Air Quality Assessment**), the dust emission class for earthworks is considered to be medium.

**16.58** The Proposed Development's substation would be the only building constructed, with a volume of around 270m<sup>3</sup>. The installation of the solar panels and battery infrastructure would

<sup>10</sup> Designated sites

not lead to any dust emissions. Based on the example definitions in Table A1 of Appendix A1 (see **Appendix 16.1: Air Quality Assessment**), the dust emission class for construction is considered to be small.

**16.59** The maximum number of daily outward heavy vehicle movements from the Site during the construction phase will occur during month four, when there will be 14 daily heavy vehicles movements from the site. Therefore, based on the example definitions in Table A1 of Appendix A1 (see **Appendix 16.1: Air Quality Assessment**), the dust emission class for trackout is considered to be small.

**16.60** A summary of the likely dust emission magnitudes is shown in Table 16.4.

**Table 16.4: Likely Dust Emission Magnitudes**

Source	Dust Emission Magnitude
Demolition	n/a
Earthworks	Medium
Construction	Small
Trackout	Small

### Sensitivity of the Area

**16.61** The sensitivity of the area depends on the specific sensitivities of local receptors, the proximity and number of receptors, local PM<sub>10</sub> background concentrations and other site-specific factors, e.g. natural screening by trees.

### Sensitivity of the Area to Dust Soiling

**16.62** There are no dust sensitive receptors located within 100m of any of the works that may lead to dust emissions, i.e., the earthworks associated with the access roads, the Proposed Development's substation and battery infrastructure and the construction of the substation. Therefore, with reference to Table A5 of Appendix A1 (in **Appendix 16.1: Air Quality Assessment**), the area is thus considered to be of low sensitivity to dust soiling from on-site works.

**16.63** The dust emission magnitude for trackout is small, therefore there is a risk of material being tracked up to 50m from the site exits. Construction vehicles would be likely to use the access roads constructed for the Proposed Development. There are no receptors within 20m of the road up to 50m from the proposed site access roads; therefore, with reference to Table A5 of Appendix A1 (in **Appendix 16.1: Air Quality Assessment**), the area is considered to be of low sensitivity to dust soiling from trackout.

**Sensitivity of the Area to the Health Effects of PM<sub>10</sub>**

**16.64** Residential properties are considered to be high sensitivity receptors to the health effects of PM<sub>10</sub> see Table A3 of Appendix A1 (in **Appendix 16.1: Air Quality Assessment**). Annual average PM<sub>10</sub> concentrations at receptors that may be affected by PM<sub>10</sub> emissions during construction would be close to background levels (11.1-13.1µg/m<sup>3</sup>), and significantly less than 24µg/m<sup>3</sup>. Therefore, with reference to Table A6 of Appendix A1 (in **Appendix 16.1: Air Quality Assessment**), the area is considered to be of low sensitivity to the health effects of PM<sub>10</sub> during on-site works and from trackout.

**16.65** A summary of the sensitivity of the area to the effects of the construction works is shown in **Table 16.5**.

**Table 16.5: Summary of the Area Sensitivity**

Potential Effect	Sensitivity of the Area	
	On-Site Works	Trackout
Dust Soiling	Low	Low
Health	Low	Low

**Risk of Impact and Significance**

**16.66** The dust emission magnitudes in **Table 16.4** have been combined with the area sensitivities in **Table 16.5** and a risk category has been assigned to each construction activity using the matrix in Table A8 of Appendix A1 (in **Appendix 16.1: Air Quality Assessment**). The resultant risk categories, shown in **Table 16.6**, have then been used to determine the appropriate level of mitigation necessary for a residual effect that is likely to be ‘not significant’.

**Table 16.6: Summary of the Risk of Impacts Without Mitigation**

Construction Activity	Dust Soiling	Health
Demolition	n/a	n/a
Earthworks	Low	Low
Construction	Negligible	Negligible
Trackout	Negligible	Negligible

### Transport Emissions

**16.67** The average daily traffic generated during the construction phase has been estimated to result in maximum annual average daily trips (AADT) of 14 heavy vehicles and 67 light vehicles. Therefore, with regard to the screening criteria in Appendix A1 (in **Appendix 16.1: Air Quality Assessment**) for areas outside an AQMA, the health impacts due to emissions from construction phase transport emissions would be insignificant. This is also well below the screening threshold for areas within an AQMA (2 located within Stapenhill and Burton-Upon-Trent, East Staffordshire).

### Construction Dust and Air Quality Mitigation

**16.68** The Site has been identified as a negligible to low risk site for dust soiling and health effects during the construction phase, as set out in **Table 16.6**. The dust risk category has been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The mitigation measures embedded within the Construction Environmental Management Plan in **Appendix 4.3**, taken from the IAQM guidance<sup>6</sup> are as follows:

- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager.
- Display the head or regional office contact information.

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Local Authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust area being carried out and during prolonged dry or windy conditions.
- Plan the site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.
- Ensure all vehicles switch off their engines when stationary.
- Limit the use of diesel or petrol-powered generators and use mains electricity or battery-powered equipment where practicable.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes, conveyors and covered skips.
- No bonfires and burning of waste materials.



## Operation

### Impact of the Proposed Development

**16.69** Once the Proposed Development is operational, no more than around 2-3 visits per day would be required for maintenance (around 6 daily light vehicle trips).

**16.70** The increase in traffic is significantly less than the 500 AADT light vehicle screening criteria for areas inside and outside an AQMA, as set out in Appendix A1 (in **Appendix 16.1: Air Quality Assessment**) therefore, detailed assessment of the air quality impacts of the Proposed Development on the surrounding area should not be required and the impacts will be insignificant.

### Impact on the Proposed Development

**16.71** There would be no relevant exposure to the air quality objectives at the Site and an assessment of the air quality effects at the site is not required.

### Cumulative Effects

**16.72** Construction trip numbers remain below the screening criteria<sup>11</sup> and are considered insignificant regardless of baseline traffic flows. The trips from any cumulative developments would form part of the baseline traffic flow; therefore, this would not change the trip numbers due to the Proposed Development, which would remain below the screening threshold.

**16.73** All construction sites have the potential to create dust. However, best practice measures to control dust are standard practices on construction sites. With the implementation of mitigation measures included in the CEMP and assumed to be implemented on the construction sites of the cumulative schemes, it is expected that any cumulative effects will not be significant..

**16.74** The assessment concludes that the construction phase will have the potential to create dust. However, best practice measures to control dust are standard practices on construction sites and with the implementation of mitigation measures, detailed in **Appendix A4 of Appendix 16.1: Air Quality Assessment** (also included in the CEMP), and assumed to be

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<sup>11</sup> See Appendix A1 in Appendix 16.1: Air Quality Assessment.

implemented on the construction sites of the cumulative schemes, it is expected that any residual effects will be not significant.

**16.75** The Proposed Development will not increase traffic above the level of the IAQM/EPUK screening criteria<sup>11</sup> during the construction or the operational phase. As trips below the screening criteria thresholds are considered insignificant, no significant effect is predicted.

## Waste

**16.76** This section of the Chapter sets out the anticipated waste streams during construction, operation and decommissioning of the Proposed Development and provides a qualitative assessment of the likely significant effects that may arise from waste.

## Assessment Methodology

**16.77** Anticipated waste types and quantities have been estimated using industry standards and the Applicant's experience of constructing other solar projects in the UK..

**16.78** IEMA's guidance on Materials and Waste in Environmental Impact Assessment<sup>12</sup> states that the sensitive receptor in relation to waste is landfill capacity. Direct effects on landfill capacity and indirect effects from the movement of waste are considered below.

**16.79** The volume of waste generated is set out in this assessment and likely methods of managing that waste are identified.

## Baseline Conditions

**16.80** The Derbyshire Waste Local Plan<sup>13</sup> identifies waste management sites in the County. This includes metal recycling sites; waste transfer stations which collect a variety of waste types and transport them for processing; treatment facilities which can extract 'value' from waste (recycling or energy from waste); and landfill sites for materials which cannot be reused or recycled. Local waste management facilities include metals recycling sites and transfer stations in Swadlincote, which appear to be operational and available for trade use. There is also an energy from waste plant being constructed within the site of the former Drakelow coal power

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<sup>12</sup> IEMA (2020) Materials and Waste in Environmental Impact Assessment.

<sup>13</sup> Derby City Council and Derbyshire County Council (2005) Derby and Derbyshire Waste Local Plan.

station, approximately 1.5km north of the Proposed Development. Cross border movement of waste is also considered in the Waste Local Plan so there is the potential for some waste streams to be processed out of the County.

**16.81** This shows there are plenty of locations within Derbyshire where waste from the Site could be sent. The waste carriers and landfill sites used will be determined by the contractor pre-construction.

**16.82** As discussed in **Chapter 4: Project Description**, as much as possible of the plant and equipment making up the Proposed Development will be recycled. As the majority of the equipment is classed as electrical it will fall under the Waste from Electrical and Electronic Equipment Regulations 2013 ('WEEE') which is designed to reduce the amount of waste electrical and electronic equipment (WEEE) incinerated or sent to landfill sites. Reduction is achieved through various measures which encourage the recovery, reuse and recycling of products and components.

**16.83** In the United Kingdom (UK) batteries are regulated to help protect the environment through the Waste Batteries and Accumulators Regulations 2009. These regulations make it compulsory to collect/take back and recycle batteries and accumulators and prevent batteries and accumulators from being incinerated or dumped in landfill sites.

**16.84** Solar panels typically consist of glass, silicon, aluminium and a small percentage of copper, tin and lead. The glass and metals are readily recycled. Recycling of silicon is an emerging market but there are already specialist companies who offer this service:

- PV Cycle ([www.pvcycle.org.uk](http://www.pvcycle.org.uk)) is a global not-for-profit organization that offers waste management services for operators of solar parks. Initially set up to recycle PV solar panels it has expanded its services to include batteries and inverters. PV Cycle has achieved a 96% recycling rate for silicon based PV solar panels.
- Recycle Solar ([www.recyclesolar.co.uk](http://www.recyclesolar.co.uk)) is based in Scunthorpe and specialises in the recycling of PV solar panels and inverters.

**16.85** In respect of the BESS, there are currently no large-scale recycling facilities for recycling batteries on this scale in the UK. Such facilities do however exist in Europe and as the UK battery market expands and matures, particularly in the electric car industry, it is expected that UK opportunities for recycling will appear.

**16.86** All other components of the Proposed Development are generally recyclable and general recycling rates for electrical equipment are in excess of 90%.

**16.87** In terms of the future baseline, the Waste Local Plan is being updated and will need to reflect the growing need for recycling/processing of batteries and solar panels and the effects of climate change.

## Assessment of Effects

### Construction Phase

**16.88** Given the nature of the Proposed Development, significant quantities of waste are not predicted. The majority of solar farm equipment and infrastructure is manufactured offsite and delivered to Site for installation and connection. Anticipated construction waste quantities are set out in **Table 16.6** based on the Applicant’s experience of constructing other solar sites in the UK.

**Table 16.6 Estimated waste arisings during construction**

Waste Type	Estimated Amount/Volume	Management
General waste (including cardboard and metal)	30-35 tonnes	Off-site recycling
Hard plastic	25-30 tonnes	Off-site recycling

**16.89** The waste hierarchy will be followed when processing waste, with re-use and recycling made a priority over disposal to landfill. All construction waste transported off site will be delivered to a relevant licenced receiver of such materials. Waste minimisation will be a key procurement consideration with the aim to procure construction material made from recycled materials. Re-use and recycling of materials will be prioritised over landfill. As such it is considered that there will be no significant effects on landfill capacity in the County due to the very low volume of waste that would not be reused or recycled, and the very high (over 90%) recycling rates for electrical equipment.

**16.90** In addition, with the low volume of waste to be transported from the Site, vehicle movements will also be low, with indirect effects on noise, air quality and traffic disruption from these vehicles considered to be negligible. Vehicle numbers for removal of material during site clearing are included in **Appendix 4.2: Indicative Construction Resource Plan** and therefore factored into the Transport and Noise assessment in **Chapters 10 and 11** respectively.

**16.91** Measures including the minimisation, segregation and recycling of waste will be included within a Site Waste Management Plan (SWMP) (see **Appendix 4.3: CEMP**) to ensure the safe and correct reuse, recycling or disposal of all waste generated. With this in place, no significant effects are anticipated.

### **Operational Phase**

**16.92** During the operational phase of the Proposed Development, up to three maintenance personnel will be present on the Site every day to carry out routine activities. The waste generated from the maintenance personnel is therefore expected to be substantially less than that generated during the construction phase, and could include:

- Welfare facility waste.
- Equipment needing replacement (potentially waste metals and battery waste).
- General waste (including paper, wood and cardboard etc).

**16.93** Materials requiring removal from the Site during operation would be transported using licensed carriers. The outline OEMP in **Appendix 4.4** states that an Operational Waste Management Plan would be prepared. Again, this would prioritise re-use and recycling of materials over landfill. The low volumes of waste anticipated during operation and adherence to controls within the Operational Waste Management Plan would mean there are no significant effects anticipated during the operational phase.

### **Decommissioning Phase**

**16.94** As with construction, as much as possible of the plant and equipment making up the Proposed Development will be recycled, particularly under the WEEE Regulations 2013 and the Waste Batteries and Accumulators Regulations 2009. As discussed above at paragraph 16.84, solar panels typically consist of glass, silicon, aluminium and a small percentage of copper, tin

and lead. The glass and metals are readily recycled. Recycling of silicon is an emerging market but there are already specialist companies who offer this service.

**16.95** Through procurement agreements with BESS suppliers, the supplier will be obligated to take ownership for removal, recycling and disposal of the BESS equipment at the end of operational life.

**16.96** All other components of the Proposed Development are generally recyclable and general recycling rates for electrical equipment are in excess of 90%.

**16.97** **Table 16.7** shows the waste streams that are anticipated to be generated during the decommissioning phase, as set out in the Decommissioning Environmental Management Plan (DEMP) (**Appendix 4.5**):

**Table 16.7 Anticipated Waste Streams During Decommissioning**

Infrastructure	Principle Materials	Management
Solar Modules	Glass Silicon Photovoltaic Cells Plastics Aluminium Copper Adhesives and Sealants	Off-site recycling or reuse elsewhere if panels are still operationally viable.  Currently approximately 80% of the components of a silicon solar module is recyclable.
Supporting Frames	Zinc Galvanised Steel	Off-site recycling
Batteries	Assumed LFP (Lithium Iron Phosphate) battery <sup>14</sup> Copper Oil Aluminium Steel Plastic	Off-site recycling

<sup>14</sup> Note battery make up and chemistry may change depending on the final system chosen

Infrastructure	Principle Materials	Management
	Lithium Iron Phosphate Graphite Hexafluoropropylene-vinylidene fluoride Copolymer Lithium Hexafluorophosphate Acetylene Black Diethyl Carbonate Dimethyl Carbonate Ethyl Methyl Carbonate Propylene Carbonate Ethylene Carbonate	
Electrical Cabling and Electrical Connectors	Copper Steel Plastics Ceramics	Off-site deconstruction Once separated, materials will be either recycled or disposed of.
Ducts	uPVC Plastic	Off-site recycling
Inverters and Transformers	Copper Steel Aluminium Ceramics Plastics Electrical Components	Off-site deconstruction Once separated, materials will be either recycled or disposed of.
Fencing and Gates	Zinc Galvanised Steel Wire Mesh Wood	Off-site recycling (with the potential for continued use of the fencing elsewhere on the agricultural land holding)
	Aggregates	On and off-site reuse

Infrastructure	Principle Materials	Management
Hardstanding, foundations and access tracks		
	Concrete	Off-site recycling (crushed for reuse as hardcore)
CCTV Cameras	Plastics Glass Electrical Components	Off-site deconstruction Once separated, materials will be either recycled or disposed of.

**16.98** The DEMP states that a Decommissioning Resource Management Plan, setting out how measures to manage the disposal of waste from the Site (including battery waste), will be prepared in accordance with relevant legislative and policy requirements at the time of decommissioning.

**16.99** As for the construction and operational phases, re-use and recycling of waste generated during decommissioning would be prioritised over landfill and as such it is anticipated that the majority of waste would be diverted from landfill with no adverse effects on landfill capacity in the County.

**16.100** Traffic and noise effects during the decommissioning phase are considered to be no greater than for construction in **Chapter 10: Transport and Access** and **Chapter 11: Noise**. As such no adverse indirect effects from noise and traffic movements associated with the movement of waste off site are anticipated.

### Mitigation Measures

**16.101** The waste management plans referred to in the CEMP, OEMP and DEMP are embedded mitigation measures and will be agreed in advance of construction, operation and decommissioning as necessary. No additional mitigation is required.

### Residual Effects

**16.102** There are no likely significant effects on waste during the construction, operation and decommissioning phases.



## Cumulative Effects

**16.103** Cumulative effects could occur if the construction or decommissioning phases of the Proposed Development coincide with the equivalent phases on other significant developments in South Derbyshire as there would be waste from multiple sites needing management. This is particularly relevant to the proposed battery energy storage installations at 'Land to the North West of Barn Farm and to the South of Walton Road and the Former Drakelow Power Station' (application reference: DMPA/2023/0170) and 'Land to the north of the Royle Farm Business Park, Caldwell Road, Burton-on-Trent' (application reference: DMPA/2021/1221), due to the similar nature of the waste streams needing to be managed.

**16.104** The cumulative volume of certain waste streams could put pressure on the capacity of local recycling plants or landfill sites. However, the waste management plans to be prepared for the Proposed Development, and assumed to be prepared for the cumulative schemes, would ensure adequate management of waste arisings and therefore it is considered that cumulative effects would not be significant

## Human Health

### Introduction

**16.105** This assessment considers whether the Proposed Development may affect the health and wellbeing of construction and operational staff on Site and the local community living near or passing through the Site.

### Assessment Methodology

**16.106** There is no consolidated methodology for the assessment of effects on human health. This assessment has therefore been informed by the scoping response by Public Health England (which focused on four themes of Access, Traffic and Transport, Socioeconomic and Land Use), IEMA Guidance<sup>15</sup>, and the good practice principles provided in NHS England's Healthy Urban Development Unit's Rapid Health Impact Assessment (HIA) Toolkit 2019. Due to the low potential for significant effects (explained below) this is a proportionate assessment using professional judgement. This assessment considers the health and wellbeing

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<sup>15</sup> IEMA (2022) Effective Scoping of Human Health in Environmental Impact Assessment.

determinants in the London Healthy Urban Development Unit (HUDU) Rapid Health Impact Assessment Tool<sup>16</sup> and draws on findings from other assessments in the ES:

- Chapter 5: Landscape and Visual.
- Chapter 6: Ecology.
- Chapter 10: Transport and Access.
- Chapter 11: Noise.
- Chapter 12: Socio-economics, Tourism and Recreation.
- Chapter 13: Climate Change.

**16.107** This assessment provides an assessment of effects on the following health and wellbeing determinants:

- Air quality and noise.
- Accessibility and active travel.
- Access to open space and nature.
- Crime reduction and community safety.
- Access to work and training.

**16.108** The HUDU assessment tools acknowledges that *“It may not be possible to quantify the impacts as many of the effects on an individual’s or community’s health are not easily measurable and many health effects are indirect and take many years to manifest themselves”*. As such it is not considered possible to undertake a quantitative assessment with quantified severity or extent of effects or significance criteria as used in other chapters of the ES.

**16.109** Therefore, the assessment presented is a qualitative assessment, and in line with the HUDU assessment tool, considers whether effects are:

- Positive – a beneficial effect is identified.
- Negative – an adverse effect is identified.

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<sup>16</sup> NHS London Healthy Urban Development Unit (HUDU); (2019) Planning for Health Rapid Health Impact Assessment (HIA) Tool (Fourth Edition, October 2019). Available at: <https://www.healthyrbandevelopment.nhs.uk/wp-content/uploads/2019/10/HUDU-Rapid-HIA-Tool-October-2019.pdf>

- Neutral – no discernible effect is identified.
- Uncertain- where uncertainty exists as to the effect.

**16.110** The assessment takes into account mitigation embedded within the application as set out in the outline CEMP, OEMP, DEMP and OBSSMP (**Appendices 4.3 to 4.6**).

## Baseline

**16.111** Receptors which were considered as potential receptors for health effects in relation to the assessment criteria in **Table 16.8** are considered to be:

- Occupants of nearby villages – Rosliston, Walton-on-Trent and Coton in the Elms – shown on **Figure 5.9: Property Locations within 0.25km** and at new properties Drakelow Park and properties in Stapenhill on the construction traffic routes.
- Residents of farms/properties outside the main villages – shown on **Figure 5.9: Property Locations within 0.25km**, including new residents occupying the housing development at Drakelow Park.
- Drivers and cyclists using local roads that run through and around the Site.
- Users of public rights of way which run through the Site (Cross Britain Way) and in close proximity (see **Figure 12.1: Recreation and Tourism Receptors**).
- Construction and operational staff on Site.

**16.112** A brief human health profile of the local population is set out below. It summarises data considered to represent key determinants of health (age, ethnicity, deprivation, economic activity and physical activity). Data has been collected for the wards within which the Site is located (Linton and Seales) where data at this level is available. It is then compared to data for South Derbyshire, East Midlands and England and Wales, again where data is available.

## Population and Demographics

**16.113** According to the Office for National Statistics (ONS) Mid-Year Population Estimates<sup>17</sup>, there are approximately 107,165 people living in South Derbyshire. Of these, 11,684 people live in Linton and Seales wards<sup>18</sup>.

**16.114** The proportion of people aged 65 years and over in Linton and Seales wards within which the Site is located (20.4% in Linton and 24.6% in Seales) is higher than in South Derbyshire (18.6%), East Midlands (19.6%), and England and Wales (18.7%).

**16.115** The share of people of working age (defined by the ONS as people aged between 16 and 64) is 62.9% in Linton and 59.4% in Seales. For Linton this is similar to South Derbyshire (62.6%), the East Midlands (62.3%) and England and Wales as a whole (62.7%). Seales is less than all these areas, reflecting its older population.

**16.116** Approximately 93.2% of residents in South Derbyshire identify ethnically as white<sup>19</sup>. This is significantly higher than in England and Wales (81.7%). The next largest ethnic groups in South Derbyshire are Asian (3.6% of the population), Mixed/Multiple ethnicity (1.8%), Black/African/Caribbean/Black British (0.8%) and Other ethnic groups (0.7%).

## Deprivation

**16.117** Based on the 2019 Indices of Multiple Deprivation (IMD)<sup>20</sup> South Derbyshire is the 218th most deprived out of 326 in England. The Lower Super Output Areas (LSOAs)<sup>21</sup> which fall within the wards of Linton and Seales are amongst the least deprived in South Derbyshire. No LSOAs in South Derbyshire are ranked in the top 10% most deprived parts of the country.

## Economic Activity

**16.118** ONS Census data<sup>19</sup> indicates that within Linton and Seales, the majority of the working age population is in employment (79% and 75% respectively, compared to 78% in South

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<sup>17</sup> ONS (2021) Estimates of the population for the UK, England, Wales, Scotland and Northern Ireland: Mid- 2021 Edition.

<sup>18</sup> ONS (2020) Ward-level population estimates (Experimental Statistics): Mid 2020 Edition.

<sup>19</sup> ONS (2021) Census Data.

<sup>20</sup> Department for Communities and Local Government (2019); Indices of Multiple Deprivation. DCLG.

<sup>21</sup> Lower Layer Super Output Areas are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales. Lower Layer Super Output Areas are built from groups of contiguous Output Areas and have been automatically generated to be as consistent in population size as possible, and typically contain from four to six 'Output Areas'

Derbyshire and 72% in England and Wales). 2.9% of economically active people are unemployed in Linton and 2.5% in Seales (compared to approximately 2.9% in South Derbyshire and in 4.5% England and Wales). 30.5% of the population of Linton are classed as economically inactive (retired, students, long term sick etc) and 32.7% in Seales (compared to approximately 29% in South Derbyshire and 32% in England and Wales).

### Health and Wellbeing

**16.119** Based on the 2021 Census data<sup>19</sup>, 4.6% of the population of Linton and 5.5% of Seales reported bad or very bad health compared to 4.6% for South Derbyshire, and 5.2% for England and Wales. The proportion of the population in Linton and Seales which identified themselves as having a long-term health problem or disability which limited their day-to-day activities a lot was 7.7% in both Wards which is higher than in South Derbyshire (6.8%) and the same as the figure for England and Wales (7.7%).

**16.120** Public Health England data<sup>22</sup> has been analysed for key health indicators. They are shown in **Table 16.8** and summarised below. This data is only outputted at a district, county, region and country level and therefore data is not available at the Ward level.

**Table 16.8: Human Health Profile for South Derbyshire compared to the County, Region and England**

Indicator	South Derbyshire	Derbyshire	East Midlands	England
Percentage of physically active adults (%) (2021/22 data)	72.3	69.9	66.3	67.3
Mortality rate from all cardiovascular diseases (per 100,000 population under 75) (2021 data)	68.8	78.5	81.9	76

<sup>22</sup> Office for Health Improvement and Disparities/Public Health England (no date) Local Authority Health Profiles. Available at: <https://fingertips.phe.org.uk/profile/health-profiles> [Accessed 23/10/23]

Mortality rate from cancer (per 100,000 population under 75) (2021 data)	110.4	125.5	125.8	121.5
Obese adults (%) (2021/22 data)	72.3	66.7	66.3	67.3
Proportion of Obese children (year 6) (%) (2021/22 data)	20.8	22.4	23.4	23.4

**16.121** The data shows that South Derbyshire has a higher percentage of physically active adults than Derbyshire, East Midlands and England. Mortality from cardiovascular diseases and cancers are lower in South Derbyshire compared to Derbyshire, East Midlands and England, but the district has a higher percentage of obese adults than Derbyshire, East Midlands and England. The proportion of obese children is lower in South Derbyshire than Derbyshire, East Midlands and England.

**16.122** The future baseline in the absence of the Proposed Development is likely to remain largely the same. The number of receptors at Drakelow Park will increase as the development nears completion and more homes are occupied. Other housing developments in the area will increase the number of people in the vicinity of the Site who could be affected.

**16.123** The effects of climate change could affect the health profile of the area though this is difficult to estimate with any certainty as it depends on people’s ability to cope with rising temperatures or more erratic fluctuations in weather patterns.

### Assessment of Effects

**16.124 Table 16.9** sets out the assessment of effects during the construction and operational phases, following the assessment matrix approach in the HUDU toolkit. Effects during the decommissioning phase are considered to be no worse than the construction phase unless specifically discussed below.

**Table 16.9 Assessment of Effects on Health Determinants of Relevance to the Proposed Development**

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
<b>Air quality and noise</b>			
<p>Does the proposal minimise construction impacts such as dust, noise, vibration and odours?</p>	<p><b>Construction</b></p> <p>Air quality</p> <p>Potential air quality effects of the Proposed Development are assessed in <b>Appendix 15.1: Air Quality Assessment</b>. Construction activities have the potential to spread dust to nearby receptors. There are no dust sensitive receptors within 100m of any of the works that may lead to dust emissions i.e., earthworks, construction of the Proposed Development’s substation and energy storage infrastructure. The Site has been identified as negligible to low risk for dust soiling and health effects.</p> <p>Residential properties are high sensitivity receptors to the health effects of PM<sub>10</sub>. Public Health England (in their response to the Scoping</p>	<p>Given the conclusions in this ES in relation to air quality and noise during construction/decommissioning there would be a neutral effect on human health (no discernible effect), and during operation there would be a neutral effect on human health (no discernible effect).</p>	<p>CEMP – measures to minimise and control dust, noise, vibration and odour</p>

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	<p>Report (see <b>Appendix 2.2: Scoping Opinion</b>) note that pollutants such as particulate matter and nitrogen dioxide are non-threshold (<i>“an exposed population is likely to be subject to potential harm at any level and that reducing public exposures of non-threshold pollutants...below air quality standards will have potential public health benefits”</i>). Although there are no thresholds with which to assessment PM<sub>10</sub> concentrations, the Air Quality assessment notes that annual average PM<sub>10</sub> concentrations at receptors during construction would be close to background levels (11.1-13.1µg/m<sup>3</sup>), and would be further minimised by mitigation measures to be included within the CEMP. As such, the construction of the Proposed Development would result in a <b>negligible (not significant)</b> effect on residential properties.</p> <p><b>Noise</b></p>		



Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	<p>The potential effect of noise and vibration associated with the Proposed Development has been fully considered in <b>Chapter 11: Noise</b>. Potential noise receptors were identified as mostly houses and farms in close proximity to the Proposed Development. For the majority of properties, predicted construction noise levels would result in a <b>negligible</b> to minor residual effect (<b>not significant</b>). Residual effects would be <b>moderate</b> (significant) at one property for a very short time if night time works are required.</p> <p>For noise from construction traffic on minor roads, the change in traffic volume with the introduction of construction workers in cars and light vehicles or HGV vehicles is likely to result in noise level changes of minimal to low magnitude which leads to a <b>negligible to minor (not significant)</b> effect.</p> <p><b>Operation</b></p>		

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	Not applicable as assessment criteria refers to construction impacts.		
Does the proposal minimise air pollution caused by traffic and energy facilities?	<p><b>Construction</b></p> <p>Potential air quality effects of the Proposed Development are assessed in <b>Appendix 16.1: Air Quality Assessment</b>. The effects of air quality from the construction traffic emissions due to movement of HGVs to and from the Site during the construction phase is predicted to be <b>negligible</b> and have <b>no significant</b> impact on the health of receptors. No mitigation is therefore required.</p> <p>Residential properties are high sensitivity receptors to the health effects of PM<sub>10</sub>. However, annual average PM<sub>10</sub> concentrations at receptors during construction would be close to background levels and would be further minimised by mitigation measures to be included</p>	Given the conclusions in this ES in relation to air quality during construction there would be a neutral effect on human health (no discernible effect), and during operation there would be a neutral effect on human health (no discernible effect)	CEMP – measures to minimise and control air pollution.

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	<p>within the CEMP. As such, the construction of the Proposed Development would result in a <b>negligible (not significant)</b> effect on residential properties.</p> <p><b>Operation</b></p> <p>Operational effects of the Proposed Development would be minimal as no more than 2-3 visits per day would be required for maintenance. This is significantly lower than the 500 AADT light vehicle screening criteria for areas outside an AQMA. Therefore, no mitigation is required.</p>		
<p>Does the proposal minimise noise pollution caused by traffic and commercial uses?</p>	<p><b>Construction</b></p> <p>The potential effect of noise and vibration associated with the Proposed Development has been fully considered in <b>Chapter 11: Noise</b>. For noise from construction traffic on minor roads, the change in traffic volume with the introduction</p>	<p>Given the conclusions in this ES in relation to noise during construction there would be a neutral effect on human health (no discernible effect), and</p>	<p>CEMP – measures to minimise and control noise.</p>

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	<p>of construction workers in cars and light vehicles or HGV vehicles is likely to result in noise level changes of minimal to low magnitude, leading to <b>negligible to minor (not significant)</b> effects.</p> <p><b>Operation</b></p> <p>The assessment of operational noise and vibration from maintenance activities and traffic during the operational stage are scoped out of the EIA, due to the low level of activity required for maintenance.</p>	<p>during operation there would be a neutral effect on human health (no discernible effect)</p>	
<b>Accessibility and active travel</b>			
<p>Does the proposal prioritise and encourage walking, for example through the use of shared spaces?</p>	<p><b>Construction/Decommissioning</b></p> <p>Access to Public Rights of Way (PRoW) through the Site will be retained during construction/decommissioning. If PRoW users reach the Site where they need to cross the construction access tracks to continue their journey, there could be a short delay to that</p>	<p>Given the conclusions in this ES in relation to PRoW during construction/decommissioning there would be a neutral effect on human health (no discernible effect), and</p>	<p>Embedded: CEMP/ OEMP/ DEMP – safety of PRoW users during construction, operation and decommissioning.</p>

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	<p>journey if a construction vehicle is already crossing the PRow. Where possible, passing PRow users will be prioritised over construction traffic.</p> <p><b>Operation</b></p> <p>Access to PRow through the Site will be retained and, additional walking routes via a new Permissive Path will be provided. The new Permissive Path will offer a new link connecting the wider PRow network to the Cross Britain Way, offering new safe public access to the communities of Rosliston and Walton-on-Trent, from existing PRow to the south of the Site.</p>	<p>during operation there would be a positive effect on human health (beneficial effect from the provision of the permissive path)</p>	
<b>Access to open space and nature</b>			
<p>Does the proposal retain and enhance existing open and natural spaces?</p>	<p><b>Construction/Decommissioning</b></p> <p>Access to Public Rights of Way (PRow) through the Site will be retained during construction/decommissioning. If PRow users</p>	<p>Given the conclusions in this ES in relation to PRow during construction/decommissioni</p>	<p>Embedded: CEMP/ OEMP/ DEMP – safety of PRow users during construction,</p>

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
<p>Does the proposal provide links between open and natural spaces and the public realm?</p> <p>Does the proposal set out how new open space will be managed and maintained?</p>	<p>need to cross the construction access tracks to continue their journey, there could be a short delay to that journey if a construction vehicle is already crossing the PRow. Where possible, passing PRow users will be prioritised over construction traffic.</p> <p><b>Operation</b></p> <p>Access to PRow through the Site will be retained, and some limited open space provision will be provided through the proposed Permissive Path and its associated planting, as set out in the Outline Landscape and Ecological Management Plan (LEMP).</p> <p>The Permissive Path will help to link the wider PRow network, connecting to the Cross Britain Way and the communities of Rosliston and Walton-on-Trent, with PRow to the south of the Site. A Permissive Path Management Plan</p>	<p>ng there would be a neutral effect on human health (no discernible effect), and during operation there would be a positive effect on human health (beneficial effect from the provision of the permissive path)</p>	<p>operation and decommissioning.</p> <p>Embedded: Permissive path management outlined in <b>Appendix 5.6: Landscape and Ecological Management Plan</b></p>

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	<p>(Appendix 4.8) sets out how the path will be managed and maintained.</p> <p>This will facilitate increased access to nature for users of the new Permissive Path.</p>		
<b>Crime reduction and community safety</b>			
<p>Does the proposal incorporate elements to help design out crime?</p>	<p><b>Construction/Operation/Decommissioning</b></p> <p>The Proposed Development is located within a rural and isolated area, and comprises infrastructure considered to be vulnerable to illegal interference including theft. The Site will be enclosed by a 2.1m post and wire ‘deer fence’ with wooden posts piled into the ground. A single line of barbed wire may also be used. Where greater security is required such as at access points, the fencing may comprise 2.1m wire mesh with steel posts piled into the ground. Again, a single line of barbed wire may be used. Additional security fencing will be provided</p>	<p>Given the conclusions in this ES in relation to crime during construction/decommissioning there would be a neutral effect on human health (no discernible effect), and during operation there would be a neutral effect on human health (no discernible effect)</p>	<p>Embedded: CEMP/ OEMP/ DEMP provide measures related to site security and crime.</p>

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	<p>around the Proposed Development’s substation and BESS, comprising 2.4m high metal palisade fencing. Pole-mounted and internal facing CCTV will be installed around the perimeter, which will be remotely monitored 24/7. CCTV will act as a visible deterrent to vandalism and other anti-social behaviour. Lighting on sensors for security purposes will be located on top of the transformer units. These will only operate in the event of a security breach. The measures put in place to secure the Proposed Development will help to design out crime.</p>		
<b>Access to work and training</b>			
<p>Does the proposal provide access to local employment and training opportunities, including temporary construction</p>	<p><b>Construction</b> It is anticipated that there will be an average of 114 full-time equivalent (FTE) jobs during the 16 month construction period (this will vary depending on the month of construction and the</p>	<p>Given the conclusions in this ES in relation to employment during construction/ decommissioning there</p>	<p>None</p>



Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
<p>and permanent ‘end-use’ jobs? Does the proposal include opportunities for work for local people via local procurement arrangements?</p>	<p>activities being undertaken). It is not yet known what proportion of the work will be carried out by sub-contractors and labour resident in South Derbyshire. It is likely that some specialist workers may need to come from outside the UK to install specialist equipment. <b>Chapter 12: Socio-Economics, Tourism and Recreation</b> estimates that approximately 47.9 full time equivalent jobs could be generated in the local economy, using conservative approaches with regards to leakage<sup>23</sup>.</p> <p><b>Operation</b></p> <p>Operational employment effects have been scoped out of the EIA.</p> <p><b>Decommissioning</b></p>	<p>would be a neutral to positive effect as it is not possible to be certain on the level of local job creation.</p>	

<sup>23</sup> Leakage refers to the proportion of output which benefit those outside of the project’s target area or group. In other words, if the output were employment, the leakage would relate to how many construction jobs would be secured by people who don’t live in South Derbyshire.

Assessment Criteria	Assessment of effects	Potential health impact	Embedded Mitigation
	<p>The ES generally considers the effects during decommissioning to be no greater than for construction. As such, it is not possible to accurately calculate the number of jobs that might be created in the decommissioning phase as effects would be as per the construction phase.</p>		

**16.125** In addition to the assessment presented in **Table 16.9** above, the following effects assessed in **Chapter 5: Landscape and Visual** and **Chapter 10: Transport and Access** are also considered to have an impact on health.

### **Landscape and Visual Effects**

**16.126** The potential landscape and visual effects associated with the Proposed Development has been considered fully in **Chapter 5: Landscape and Visual**.

**16.127** The overall study area considered for LVIA extends to 5km from the Site in all directions. Several key road routes are located within the study area. Compact villages with larger towns in the north are present in the study area. Three operational solar farms also exist within the study area. There are no nationally or locally designated landscapes within the study area.

**16.128** Visual effects are experienced by people at different locations around the study area. These are visual receptors who are affected either in static or transitional locations. A detailed analysis of theoretical visibility has been set to screen which local communities are considered in the detailed assessment. The same method has been applied to route visibility, alongside viewpoint assessments to provide information on which routes are carried forward for detailed assessment.

**16.129** The construction period would bring potential short-term visual effects arising from the presence of partially constructed infrastructure and the undertaking of construction activities on the Site. These effects would be significant for the following:

- The local community of Rosliston at its most elevated edge (at Coppice View and The Chase).
- Intermittent sections of Coton Road/ Church Street (between Walton-on-Trent and Coton in the Elms).
- Intermittent sections of Rosliston Road (between Walton-on-Trent and Rosliston).
- The majority of Catton Lane (between Rosliston and Church Street).
- A small section of unnamed road (between Walton-on-Trent and Church Street).
- Intermittent sections of Cross Britain Way / National Forest Way long distance footpath.
- Intermittent sections of Public Rights of Way to the south of the Cross Britain Way / National Forest Way and within 2.5km of the Site.

**16.130** Although visual effects are significant during the construction phase; they are short term and temporary. The effects would largely be due to the visible movement of construction vehicles across the Site and part constructed components of the Proposed Development. The assessment considers that operational effects for most receptors will reduce to negligible at Year 10 of operation once screening planting has matured, with the exception of properties on elevated positions on the edge of Rosliston, users of some local roads and PRoW.

**16.131** Lighting will be kept to a minimum as far as practicable during construction and directed away from nearby properties. Given the infrequent and intermittent nature of the lighting and the short-term nature of the construction phase combined with its isolation to specific locations, the presence of temporary lighting during construction will not result in any significant effects. No operational lighting is being proposed other than the potential use of alarm lights on all transformer stations that would only be activated in case of theft. Given the infrequent and intermittent nature of the security lighting and its isolation to specific locations, the presence of the security lighting during operation will not result in any significant effects.

## **Transport**

**16.132** The potential effects of transport associated with the Proposed Development have been considered in **Chapter 10: Transport and Access**.

**16.133** Automated Traffic Count (ATC) data has been collected across the local road network to understand the existing level of Average Annualised Daily (AADT) and Weekly (AAWT) Traffic. This has provided an understanding of the baseline level of two-way traffic that exists along the proposed construction vehicle routing. Personal Injury Collision (PIC) Data has also been obtained from South Derbyshire Constabulary and Staffordshire County Council to identify collisions on proposed construction routes.

**16.134** The highest number of vehicles resulting from the Proposed Development will be during the construction phase, consisting of construction workers, cranes, construction vehicles and construction material deliveries using HGVs.

**16.135** Potential effects are likely to increase during the construction phases when materials and contractors are brought to the Site. These effects will be temporary in nature.

**16.136** The assessment has identified that the following effects will be negligible to slight and therefore **not significant**:

- Severance of communities.
- Road vehicle and non motorised vehicle user delay.
- Non-motorised amenity.
- Fear and intimidation on and by road users.
- Road user and pedestrian safety.

**16.137** A Framework Construction Traffic Management Plan (CTMP) has been provided at **Appendix 10.1: Outline Construction Traffic Management Plan** to limit the risk of any safety impacts of transport effects arising from the Proposed Development, particularly along the proposed construction routes.

## Summary of Effects

**16.138** The assessments above have identified a number of benefits and disbenefits to the health determinants of the local community:

- Air quality, noise and neighbourhood amenity – with the implementation of mitigation measures in the CEMP, OEMP and DEMP, effects from air quality and noise are not considered to result in a negative effect on this determinant.
- Accessibility and active travel – there will be no negative effects on this determinant as access to existing PRoW will be maintained. There will be a positive effect from the creation of a Permissive Path to extend the network of paths in the area.
- Access to open space and nature - there will be no negative effects on this determinant as access to existing PRoW will be maintained. There will be a positive effect from the creation of a Permissive Path and a network of planting and habitat creation.
- Crime reduction and community safety - there will be no negative effects on this determinant as measures put in place to secure the Proposed Development will help to design out crime.
- Access to work and training – there will be neutral to positive effect on this determinant due to the unknown level of provision of local employment during the construction phase.
- Transport effects including driver and pedestrian delay during construction are not significant.

- Effects on visual amenity are found to be significant for residents at elevated positions on the edge of Rosliston, users of the local PRoW network and users of local roads in the immediate vicinity of the Site. For road and PRoW users effects will be transitional and not for the entire route. Most effects are temporary until planting has matured. It is considered that these localised significant visual amenity effects are not enough to result in an overall significant effect on health and wellbeing.

## Cumulative Effects

**16.139** This section assesses the potential effects of the Proposed Development in combination with the potential effects of other proposed developments listed in **Chapter 2: The Environmental Impact Assessment**.

**16.140** Cumulative effects are considered as follows:

- Air quality and noise– there are considered to be no significant cumulative effects as all schemes should have measures to mitigate and manage effects from air quality and noise through their specific CEMP, OEMP and DEMP management plans.
- Accessibility and active travel and Access to open space and nature – there are considered to be no significant cumulative effects on this determinant. It must be assumed that any proposal for housing or commercial development will make provision for active travel and will ensure the development is accessible to current standard and requirements. It is also necessary to assume that any development interacting with the PRoW network will ensure suitable management of effects such as diversions to ensure use of the network is not affected.
- Crime reduction and community safety - there will be no significant cumulative effects on this determinant as all developments will be required to design out crime.
- Access to work and training – without access to the detail on construction costs and employment for all cumulative schemes, it has been assumed that there will be a, not significant, cumulative, beneficial effect related to construction employment. Similarly, during operation, all developments are likely to provide some level of employment and as such beneficial cumulative effect are anticipated, though these are unlikely to be significant.

**16.141** In conclusion, the Proposed Development is unlikely to result in effects which could significantly affect people’s health and wellbeing either in isolation or cumulatively.

## Telecommunications, Television and Utilities

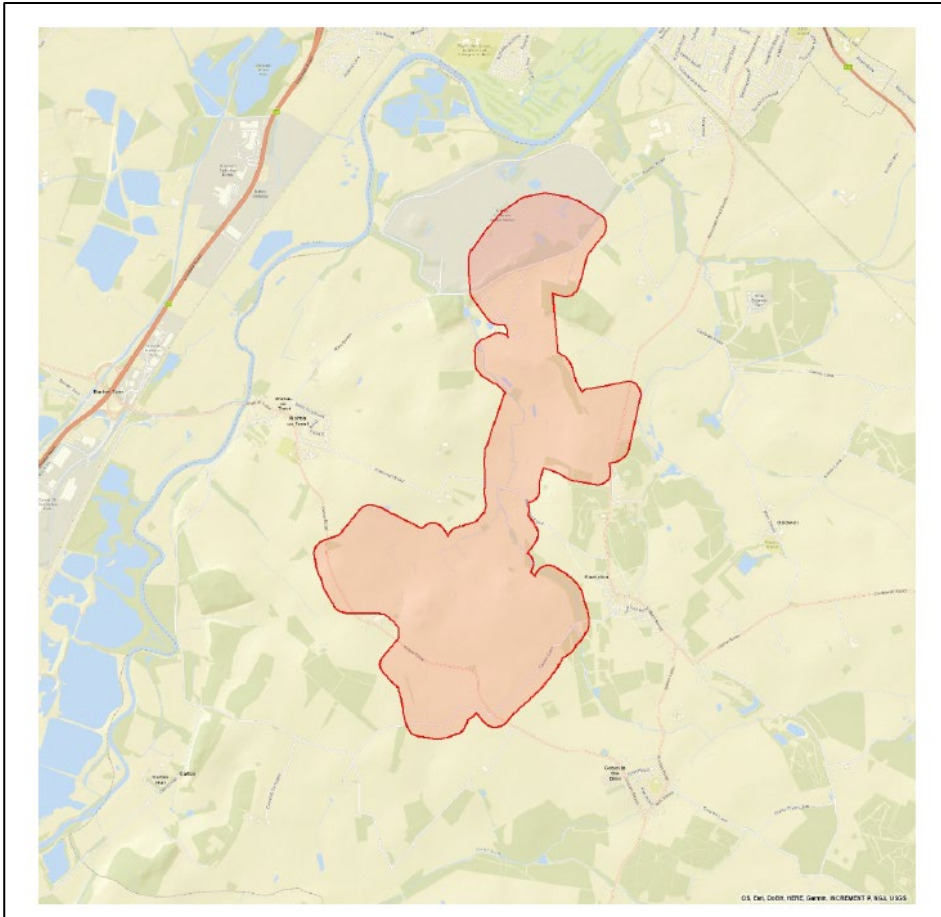
### Introduction

**16.142** The Proposed Development has taken into consideration the potential to affect existing telecommunication and utility infrastructure. Onsite utilities could include water, sewers, gas or oil pipelines and electrical cables. Telecommunication infrastructure in this context means overhead communication links.

### Assessment methodology

**16.143** The Applicant and Atkins Limited conducted consultation and desktop searches of all utilities known to operate within 50m of the original Site boundary (as shown on **Figure 3.2a** and **b: Original Layout February 2021**) to identify existing utilities that may be affected as a result of the Proposed Development (see **Appendix 16.2 Utility Search Report**). The area assessed is presented in **Plate 1**.

### Plate 1: Search Area for the Atkins Utility Search Report



**16.144** The desktop search concluded that the following utility providers have the potential to be affected by the Proposed Development:

- Cadent Gas.
- Derbyshire County Council.
- Environment Agency.
- National Grid Electricity Transmission plc. (national electricity network operator)
- National Grid Energy Distribution plc (local electricity network operator, formerly Western Power Distribution).
- Severn Trent Water.
- South Staffordshire Water.
- BT Openreach.



- Vodafone.
- Utility Assets (electricity).

**16.145** Responses from utility operators/providers received to the consultation and desk study search are summarised in **Table 16.10**. Many providers included mapped information for their utility infrastructure. Available information on existing utilities is shown in **Figure 16.1**. It should be noted that this may not show all utilities and infrastructure. Further consultation has been undertaken with utility providers where necessary, and assets considered in the design of the Proposed Development. A qualitative approach is used to assess the likelihood of significant effects on telecommunications, television reception and utilities.

**Table 16.10: Summary of Utility Operator/Provider Consultation Responses (including unaffected utilities/assets)**

Consultee	Date	Response	Action
Airwave/ Motorola Solutions	Email response to early consultation from project team 10/02/22 and Network Interference Assessment issued 11/10/23	<p>Recommended undertaking an Airwave interference assessment to avoid any objections. The Interference Assessment identified an Airwave 13GHz point to point microwave radio link running above and across the solar panels (see bold green line on <b>Plate 2</b>). The report concludes that some of the proposed solar panels could cause interference to this link. It states that <i>“Airwave will need to monitor this link closely once the solar panels are installed and operational. Should the link performance degrade to such an extent and becomes unusable for the emergency services then the solar panel developer will be responsible for the hardware upgrade of this 13GHz microwave radio link.”</i> The report goes on to state that <i>“Airwave has</i></p>	Noted. The Applicant will work with Airwave if link performance degradation is identified.

Consultee	Date	Response	Action
		<i>no objections to the development of the Solar Panel Farm at Oaklands”.</i>	
Arqiva	Email response to early consultation from project team 25/11/21	Concluded the Proposed Development is not likely to have an adverse effect on operations and therefore, have no objections to the proposal.	N/A
BT Openreach	Email response to early consultation from project team 03/12/21	Noted the Proposed Development should not cause interference to BT’s current and presently planned radio network.	Consultation between BT Openreach and the Applicant is on-going to agree a set of protective provisions where BT Openreach consider this necessary.
	Response to the PEIR 06/05/22	Stated a detailed investigation is required to ensure their network is protected.	

Consultee	Date	Response	Action
Cadent Gas	Response to Atkins utility report 27/12/21	Provided a map of assets and requested further information on the Site location.	This has been considered in this Chapter from paragraph 16.142, and utilities have been taken into account in the design of the Proposed Development (see <b>Chapter 3: Site Selection and Design Strategy</b> ).  Ongoing dialogue with Cadent to agree protective provisions and understand acceptable solutions for crossing existing assets. The Applicant commits to engage with Cadent prior to any actual works commencing to agree plans.
	Response to the PEIR 09/06/22	<p>Identified the following apparatus within the redline boundary or within the vicinity of the Proposed Development: - Medium Pressure mains and associated equipment.</p> <p>Existing easements for these pipelines means the erection of permanent / temporary buildings / structures and changes to existing ground levels or storage or materials etc within the easement strip is not permitted.</p> <p>If diversions of apparatus are required to facilitate the Proposed Development, adequate notice and discussions should begin at the earliest opportunity, noting that diversions for</p>	

Consultee	Date	Response	Action
		high pressure apparatus can take in excess of two years to plan and procure materials.	
C.A Telecom UK	Response to Atkins utility report 19/01/22	Atkins confirmed C.A Telecom UK has no apparatus located in the vicinity of the Site.	None required
CityFibre	Response to Atkins utility report 19/01/22	Atkins confirmed CityFibre has no apparatus located in the vicinity of the Site.	None required
ESP Utilities Group Ltd	Response to scoping 16/09/21	Confirmed ESP Utilities Group Ltd may be affected by the Proposed Development and have an intermediate pressure gas main serving the area at grid reference E423401, N317500. ESP should be kept informed and updated about the extent and nature of the proposed works to establish whether any additional or precautionary works are necessary to protect their network.	The Applicant understands ESP's assets are located in the villages of Walton-on-Trent and Rosliston and will not be directly affected by the proposed works, but may be impacted as a result of any disruption to a Medium pressure gas pipe owned by Cadent Gas which serves ESP's residential gas assets. The Applicant has taken into account Cadent's medium pressure gas pipe in the

Consultee	Date	Response	Action
	Response to the PEIR 03/05/2022	ESP Utilities Group Ltd has no gas or electricity apparatus in the vicinity of this site address and will not be affected by your proposed works	design of the scheme and has engaged in diversion and protective provisions discussions with Cadent to protect the operation of its medium pressure gas main in the vicinity of the construction track and cable route to the National Grid Drakelow substation. The pipe will be protected by load-bearing plates and civil works from construction vehicle crossings, and the cable will likely be directionally drilled underneath utilities that cross its path (see Work No 4 in <b>Chapter 4: Project Description</b> ).
	Response to Targeted Consultation 14/03/23	Confirmed that ESP Utilities Group Ltd may be affected by the proposed works as there is an intermediate and medium pressure gas main serving the area. The Applicant will need to liaise with a Network Controllers to check the site before any works are done	
Environment Agency	Response to Atkins utility report 22/12/21	Provided more information on working near a main river.	Watercourse crossings to reflect EA advice. Easement requirements built into design.
	Response to the PEIR 26/05/22	Note proximity of the cable route to watercourses and highlight need for easement between solar panels and watercourses.	

Consultee	Date	Response	Action
		Advise to cross watercourses perpendicular to the channel.	
GTC	Response to Atkins utility report 19/01/22	Atkins confirmed GTC has no apparatus located in the vicinity of the Site.	None required
Instalcom	Response to Atkins utility report 19/01/22	Atkins confirmed Instalcom has no apparatus located in the vicinity of the Site.	None required
JRC	Email response to early consultation from project team 23/11/21	Stated that as long as the Proposed Development remains below the height of existing overhead lines they would not have any objections to the proposal. Generally, solar farms do not pose an issue, unlike wind turbines due to their coating and rotation of their blades.	N/A

Consultee	Date	Response	Action
MBNL	Email response to early consultation from project team 28/11/21	Stated the proposed structures at their current height would not be a threat to existing microwave infrastructure.	N/A
National Grid Electricity Transmission (NGET)	Response to Scoping 31/08/21	Advised there are several high voltage overhead transmission lines and high voltage substation with the scoping area. Statutory electrical safety clearances must be maintained at all times. Any proposed buildings must not be closer than 5.3m to the lowest conductor. National Grid recommends that no permanent structures are built directly beneath overhead lines.	NGET has been extensively consulted during the development of the Proposed Development's design and connection to the NGET network.  All works near NGET assets will be carried out under safe working guidance and the planned cable route has been agreed with NGET through the NGET Land Clearance process.
	Response to Atkins utility report 27/12/21	Stated the proposed work location is within the High Risk zone from NGET's apparatus and Must Not Proceed without further assessment by Asset Protection.	



Consultee	Date	Response	Action
	Response to the PEIR 27/05/22	Identified high voltage electricity overhead transmission lines and substations within or in close proximity to the order boundary.	
BT Openreach	Response to Atkins utility report 22/12/21	Enclosed plans of assets within the National Grid Drakelow Substation site.	Consultation between BT Openreach and the Applicant is on-going to agree a set of protective provisions where BT Openreach consider this necessary.
	Response to the PEIR 06/06/22	Stated a detailed investigation is required to ensure their network is protected, but Applicant explained the early stage of development. Applicant has identified asset locations, and is seeking clarification of crossing solutions available to avoid diversions.	
Severn Trent Water	Response to Atkins utility report 14/12/21	Supplied maps of assets.	Consultation between Severn Trent Water and the Applicant has been ongoing and a rising main has been confirmed as not

Consultee	Date	Response	Action
	Response to PEIR 27/04/22	<p>There is a 150mm rising sewer main at grid ref 423363 317588 and asset protection precautions to be followed.</p> <p>In relation to a sewer pipe crossing land just north of Rosliston Road, the Applicant on 24<sup>th</sup> October 2023 had confirmation from Severn Trent that by using approved techniques in consultation prior to construction, the Applicant should not impact their asset.</p>	operational. Any other assets owned by Severn Trent Water will be subject to protective provisions where Severn Trent Water consider this necessary.
South Staffordshire Water	Response to Atkins utility report 21/12/21 and response to private engagement, initiated 04/05/23	<p>Map of assets provided.</p> <p>South Staffordshire Water confirmed there are four assets within the Site boundary, plus 1 private water pipe in the solar pv area that is not their responsibility:</p> <p>Location 1- 423875, 319405 - existing 63mm mdpe main at the proposed crossing point</p>	<p>The water main has been mapped and taken into account during design of the Proposed Development. There is the potential to construct solar PV panels on concrete pads to avoid affecting the water main.</p> <p>Consultation between South Staffordshire Water and the Applicant is on-going to agree protective provisions.</p>

Consultee	Date	Response	Action
		<p>Location 2- 423609, 319135 - existing 1 ¼" GI supply (This is location to be confirmed)</p> <p>Location 3- 423588, 318747 - existing 1 ¼" GI supply (This is location to be confirmed)</p> <p>Location 4- 423426, 317584 - existing 4" AC main at the proposed crossing point</p> <p>South Staffordshire Water confirmed no objection to directional drilling of cabling underneath their assets subject to cooperation and using approved measures to protect assets.</p>	
Sky Telecommunications Services	Response to Atkins utility report 13/01/22	Confirmed Sky Telecommunications Services will not be affected by the Proposed Development.	N/A

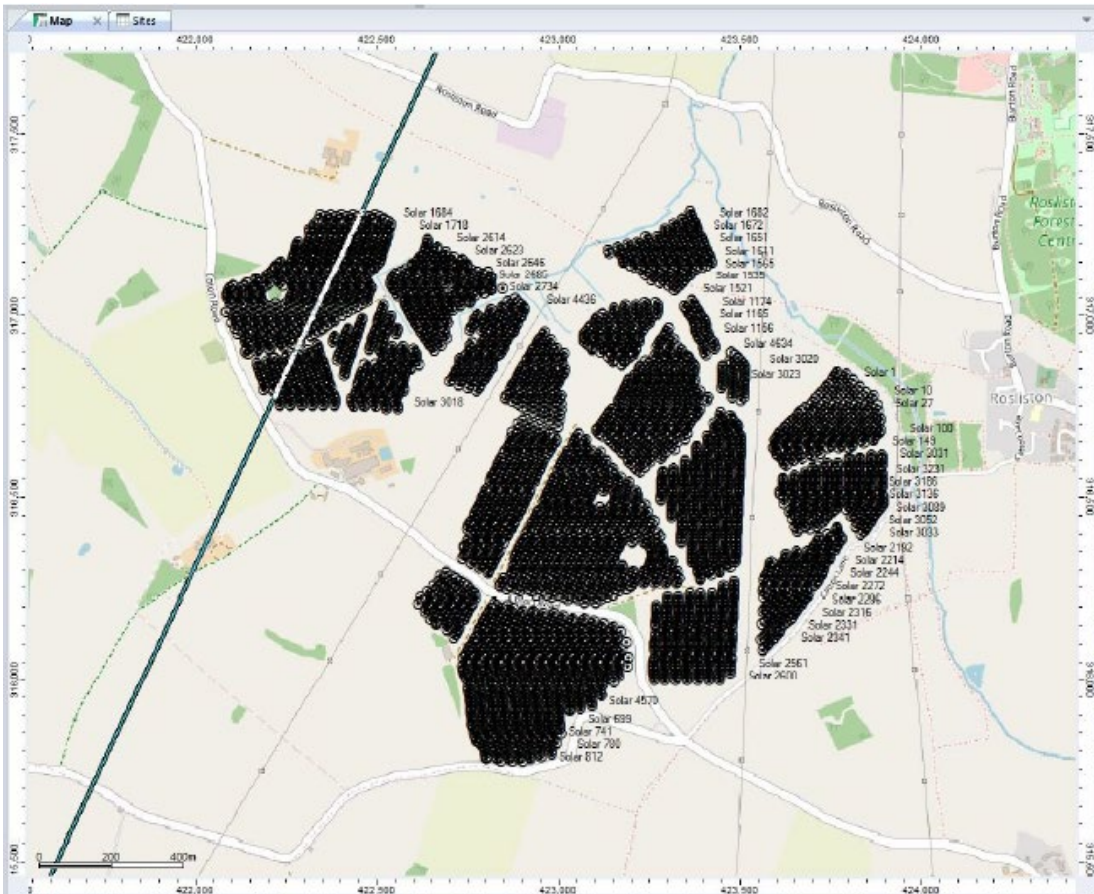
Consultee	Date	Response	Action
Telefonica/Virgin Media/O2	Email response to early consultation from project team 22/11/21 and 26/07/2	Requested coordinates of the location of the Proposed Development.  Confirmed that although there is a link running south of the Proposed Development, this is approximately 400m from the redline boundary so will not be affected.	None
Verizon	Response to Atkins utility report 22/12/21	Atkins confirmed Verizon has no apparatus located in the vicinity of the Site.	N/A
Virgin Media	Response to Atkins utility report 19/01/22	Atkins confirmed Virgin Media has no apparatus located in the vicinity of the Site.	N/A

Consultee	Date	Response	Action
Vodafone	Response to Atkins utility report 29/12/21, response to Targeted Consultation 27/03/23 and direct liaison with Vodafone on 31/10/2023	Confirmation that Vodafone: Fixed does have apparatus within the vicinity of the proposed works. Plans provided show these to be within the National Grid Drakelow Power Station substation.	Through liaison with Vodafone the Applicant has established that their assets are within the existing substation access road. Due to the low number of LGV using the road no impact on the Vodafone cable is predicted and no diversion or works are expected to be required.
Western Power Distribution (now National Grid Energy Distribution, NGED)	Response to Atkins utility report 27/12/21	Confirmed they have networks in close proximity to the Proposed Development.	The Applicant is negotiating protective provisions and an Asset Protection Agreement with NGED.
	Response to PEIR 06/06/22	NGED have submitted a holding objection until the Applicant considers including WPD specific protective provisions secured on other DCO schemes including the Triton Knoll Electrical	

Consultee	Date	Response	Action
		System 2016 and the M54 to M6 Link Road Development Consent Order 2022. Furthermore, NGED expect that the developer to enter into an Asset Protection Agreement.	

**16.146** No response was received from Ofcom. Where no response was received, it is assumed that the organisation had no comments to make on the Proposed Development.

**Plate 2: Indicative Location of Airwave 13GHz Point to Point Microwave Radio Link**



**Baseline Conditions**

**16.147** The area surrounding the Proposed Development receives television signals that were made exclusively digital, after the digital switchover was completed in the region in 2011 and hence no analogue TV signals are broadcast in the area.

**16.148** Analysis of the Ofcom Spectrum Information System (SIS) shows that there is a National Grid telecoms transmitter within the National Grid Drakelow Substation with fixed telecommunication links heading north and east away from the Site. Another fixed telecommunications link licensed to Airwave Solutions Ltd runs through the edge of fields O15 and O16.

**16.149** For television services, the area around the Proposed Development is most likely served by the Sutton Coldfield transmitter approximately 21km south west. As the Proposed

Development has no moving parts, it is unlikely to interfere with digital television signals and therefore no effects are anticipated.

**16.150** In terms of the location of utilities, consultation undertaken and set out in **Appendix 16.2** and **Table 16.10** has identified the following assets within the Site which have been taken into account in design of the Proposed Development. These are shown on **Figure 16.1** where location information is available.

- Medium pressure gas main.
- Electricity services operated by NGET and NGED apparatus including overhead and underground lines.
- Telecommunications services operated by BT Openreach and Vodafone (underground cable along south side of Walton Road, within Park Farm access track, and within the National Grid Drakelow substation site).
- Water services in the verge on the north side of Walton Road at National Grid Drakelow substation, in field north of Rosliston Road, carriageway of Rosliston Road, and within boundaries of Oaklands Farm managed by South Staffordshire Water.
- Overhead microwave radio link operated by Airwave (shown on **Plate 2**).

## Assessment of Effects

### Telecommunications

**16.151** Telecommunications masts are not expected to be affected by the Proposed Development given the low-lying nature of the Scheme and the lack of potential for it to form a barrier between the mast and any receiving station. Effects on the Airwave 13GHz point to point microwave radio link which crosses field O15 and O16 (see Plate 1) have been investigated by Airwave in an interference report. The report concludes that some of the proposed solar panels could cause interference to this link as a direct result of multipath propagation, namely reflections and diffractions bouncing off the solar PV panels. It states that *“Airwave will need to monitor this link closely once the solar panels are installed and operational. Should the link performance degrade to such an extent and becomes unusable for the emergency services then the solar panel developer will be responsible for the hardware upgrade of this 13GHz microwave radio link.”* The report also states that *“Airwave has no objections to the*



*development of the Solar Panel Farm at Oaklands*". If, during operation of the Proposed Development, Airwave identifies degradation of the performance of the link, mitigation options will be available. These could include:

- Increasing the heights of the dishes on either link end so that the link path is vertically further from the solar panels.
- Re-networking where an extra node (link end) is added to the link so that the path is taken away from the solar farm.
- Increasing the link frequency, which could be less susceptible to interference.

**16.152** As a worst case, if effects were identified, it is considered that available mitigation would result in no significant adverse effects on telecommunications.

### **Television Reception**

**16.153** The Proposed Development consists of fixed low-lying infrastructure with no moving parts and is therefore unlikely to interfere with digital television signals and therefore no effects are anticipated in the construction, operation, and decommissioning phases.

### **Utilities**

**16.154** Precautionary measures have been included through the design process and as part of the embedded mitigation for the Proposed Development.

**16.155** The Applicant has consulted with utilities operators to identify necessary easement corridors required for the overhead lines and other utility assets that cross the Site. Where necessary construction methods have been discussed where construction activities (e.g. cabling) need to cross assets.

**16.156** Ground penetrating radar and other suitable techniques will be used before excavation to identify any unknown utilities and this will be followed by consultation and agreement of construction / mobilisation methods prior to works commencing.

**16.157** In addition, consultation with regards to Protective Provisions has also taken place and where any existing utility assets are likely to be impacted Protective Provisions will be sought to be agreed with that provider. Thereafter any works within an agreed distance of the asset will require to be undertaken in accordance with the requirements set out in the Protective

Provisions. As measures are in place to ensure the protection of all utility assets it can be concluded that no adverse effects on utilities are expected.

## Cumulative Effects

**16.158** All developments need to factor in the location of utilities and telecommunications infrastructure prior to construction not only to protect these assets but to also ensure the safety of construction workers. It is expected that each development will undertake suitable surveys and identify design changes or mitigation to avoid adverse effects on such assets. There are therefore not considered to be any cumulative effects as a result of the Proposed Development and other developments identified on **Figure 2.1 Cumulative schemes**.

## Other Issues Overall Conclusions

**16.159** The assessments presented in this chapter are concluded in **Table 16.11** below.

**Table 16.11: Summary of Effects – Other Issues**

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
<b>Major Accidents and Disasters - Potential for the Proposed Development to be Affected by a Major Accident or Disaster</b>			
Criminal Activity – construction, operation and decommissioning	Not significant	Security measures as set out in the CEMP, OEMP and DEMP.	Not significant
<b>Major Accidents and Disasters - Potential for the Proposed Development to Cause Major Accidents and Disasters</b>			
Fire risk – construction, operation and decommissioning	Not significant	OBSSMP and relevant fire safety provisions in the CEMP and OEMP.	Not significant

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
Health and safety – construction, operation and decommissioning	Not significant	Compliance with UK health and safety legislation and CDM (Construction Design & Management) regulations.	Not significant
<b>Air Quality</b>			
Dust and particulate matter arising during construction	Not significant	Mitigation for dust identified in the CEMP	Not significant
Nitrogen dioxide and particulate matter emissions from construction and operational traffic	Not significant	None required	Not significant
<b>Waste</b>			
Management of waste arisings during construction, operation and decommissioning	Not significant	Management of waste via relevant licensed waste receivers with emphasis on reuse and recycling ahead of disposal to landfill. Waste management plans to be secured	Not significant

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
		as part of CEMP, OEMP and DEMP.	
<b>Human Health</b>			
Effects on health determinants	Not significant (neutral to positive)	Mitigation for dust, noise, health and safety, site security identified in the CEMP, OEMP and DEMP.  Proposed planting in <b>Appendix 5.6: Outline LEMP.</b>	Not significant
<b>Telecommunications, Television and Utilities</b>			
Telecommunications – operation only	Not significant	Mitigation options if required during operation could include:  Increasing the heights of the dishes on either link end so that the link path is vertically further from the solar panels.  Re-networking where an extra node (link end) is added to the	Not significant

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
		<p>link so that the path is taken away from the solar farm.</p> <p>Increasing the link frequency, which could be less susceptible to interference</p>	
Television reception – operation only	Not significant	None required	Not significant
Utilities – construction only	Not significant	<p>Consultation with utility operators and identification of acceptable construction methods and protective measures to be agreed with operators.</p>	Not significant
<b>Cumulative Effects</b>			
Major accidents and disasters – construction, operation and decommissioning	No effects	<p>Management plans for each development such as CEMP.</p>	No effects
Air Quality – construction,	No effects	<p>Management of dust and particulates</p>	No effects

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
operation and decommissioning		within CEMP for each development.	
Waste management	Not significant	Waste management plans to be secured as part of CEMP, OEMP and DEMP where relevant for other developments.	Not significant
Human health	Not significant	Mitigation for dust, noise, health and safety, site security identified in the CEMP, OEMP and DEMP where relevant for other developments.	Not significant
Telecommunications, Television and Utilities	Not significant	All developments to adequately survey their sites for utilities and telecommunications infrastructure prior to construction and enter into discussions with operators where necessary to agree suitable mitigation.	Not significant

