



Tween Bridge Solar Farm

A Nationally Significant Infrastructure Project in the Energy Sector

Preliminary Environmental Information Report

Chapter 16 – Other Environmental Topics

October 2023



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16. Other Environmental Topics

16.1. Introduction

16.1.1. The purpose of this chapter of the working draft PEIR is to collate the assessment of other miscellaneous environmental topic areas that do not warrant individual chapters, either due to the brevity of the assessment or the limited impact associated with the Scheme.

16.1.2. This assessment reports on the baseline and Scheme design information available at the time of writing this working draft PEIR. The PEIR will be updated as further assessments become available and any updated to the baseline will be reported in the next iteration of the PEIR which will be presented as part of the statutory pre-application consultation. The Scoping Opinion issued by the Planning Inspectorate on 14 March 2023 and included at Appendix 1.1 has been taken into account during the preparation of this chapter and this is discussed at paragraph 16.3.4 below.

16.1.3. This draft chapter describes and assesses the potential effects of the Scheme in terms of:

- Major Accidents and Disasters
- Waste

16.1.4. Baseline and assessment work is ongoing, it is anticipated that the following information will be made available for the next iteration of the PEIR: –

- Outline Construction Environmental Management Plan
- Outline Waste Management Plan
- Glint and Glare Assessment
- Consideration of Cumulative Impacts
- Battery Safety Management Plan
- Method statement for trenchless works
- Ongoing utilities searches
- Consideration of climate change

16.2. Major Accidents and Disasters

16.2.1. This section summarises the potential effects of the Scheme on the risks of major accidents or disasters occurring. The consideration relates only to those accidents and disaster which are relevant to the Scheme.

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Policy Context

- 16.2.2. The The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, cite two specific directives as examples of types of risk assessments to be considered as part of an Environmental Impact Assessment (EIA). These are the Directive 2012/18/EU of the European Parliament and of the European Council (which deals with major accident hazard registered sites) and the Council Directive 2009/71/Euratom (which deals with nuclear sites). Neither of these Directives is relevant to the Proposed Development. The IEMA Guidance ‘Major Accidents and Disasters in EIA: A Primer’ has been referred to in preparation of this draft chapter.

- 16.2.3. The draft National Policy Statement EN-1 identifies how some energy infrastructure will be subject to the Control of Major Accidents Hazards (COMAH) Regulations. These Regulations aim to prevent major accidents involving dangerous substances and limit the consequences to people and the environment of any that do occur. The Scheme does not fall within the requirements of the COMAH Regulations.

- 16.2.4. In regard to the extant Overarching National Policy Statement for Energy EN-1 and with specific reference to section 4.13 which acknowledges access to energy is clearly beneficial to society as a whole, the production, distribution, and use of energy may have negative impacts on some people’s health. The policy requires the decision maker to consider potential effects of development proposals on human health, stating: *“where the proposed project has an effect on human beings, the ES should assess these effects for each element of the project, identifying any adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate.”*

Scoping Criteria

- 16.2.5. The following major accidents and disaster comments were provided in the Planning Inspectorate Scoping Opinion dated 14 March 2023.

Table 16.1 Extract of aspect based scoping table from Scoping Opinion for Tween Bridge Solar Farm

ID	REF	MATTER	PLANNING INSPECTORATE COMMENTS	APPLICANT’S RESPONSE
3.1.1	Table 3.4 and 3.5	Major accident and disaster	The Scoping Report proposes that major accidents and disasters will be assessed within ES Chapter 16 (‘Other Environmental Topics’), rather than in a standalone ES Chapter. The Inspectorate has considered the nature and characteristics of the Proposed Development and is content with this approach.	The applicant confirms that chapter 16 follows the approach set out in the scoping opinion.
3.2.1	Table 3.4	Methodology	Table 3.4 of the Scoping Report states that a proportionate	Section 16.4 of this draft PEIR chapter has been

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			assessment of risks from major accidents and disasters during construction, operation and decommissioning of the Proposed Development will be included in the ES, although a proposed assessment methodology has not been set out. The ES should describe the baseline, relevant receptors and methodology applied to the assessment of major accidents and disasters (including how significance of effect has been determined), with reference to relevant guidance.	prepared in line with the guidance set out by the scoping opinion.
3.13	n/a	Potential accidents and disasters	The potential accidents and disasters which the Applicant considers to be relevant to the Proposed Development have not been defined at this stage. The ES should explain the approach taken to identify relevant risks/ hazards.	This draft PEIR chapter has been prepared in line with the guidance set out by the scoping opinion. The approach taken to identify the hazards is set out within section 16.4 of this draft Chapter.
			The Inspectorate considers that the ES should assess the risk of fire/ explosion at the BESS, including any measures designed to minimise impacts on the environment in the event of such an occurrence. Any mitigation measures relevant to safety risks associated with the BESS, such as an Outline Battery Safety Management Plan, should be described in the ES and their delivery secured through the dDCO. Effort should be made to agree any necessary measures with relevant consultation bodies.	Section 16.5 of this draft chapter described the anticipated embedded design mitigation measures for the BESS.
			The ES should also assess risks to and from any Major Accident Hazard Pipelines and Major Accident Hazard sites that may be impacted. The Applicant's attention is drawn to scoping consultation responses from Northern Gas Networks and the	Section 16.5 of this Chapter assesses the potential for overhead utilities to be affected during the construction of the Scheme. Work is ongoing to identify all the underground utilities

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			Health and Safety Executive (Appendix 2 of this Opinion) in this regard.	within and adjoining the site.
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Assessment Methodology

- 16.2.6. In general, major accidents or disasters, as they relate to the Scheme, fall into three categories:
- Events that could not realistically occur, due to the nature of the Scheme or its location;
 - Events that could realistically occur, but for which the Scheme, and associated receptors, are no more vulnerable than any other development; and
 - Events that could occur, and to which the Scheme is particularly vulnerable, or which the Scheme has a particular capacity to exacerbate.
- 16.2.7. An exercise was undertaken to identify all possible major accidents or disasters that could be relevant to the Scheme. The National Risk Register identifies risks that could affect the UK. A long list of potential major accidents or disasters was established utilising the National Risk Register. Major accidents or disasters with little relevance in the UK were not included, such as volcanic eruptions for example. Table 16.2 details the long- listed major accidents and disasters relevant to the Scheme and shortlists those considered for further assessment in this Chapter.
- 16.2.8. For the purpose of this assessment, major accident or disaster has been defined as an event that threatens immediate or delayed loss of life or permanent injury/or serious long lasting or permanent damage to the environment and requires the use of resources beyond those of the Applicant to manage. These could be internal to the development or an external event, not in the applicant’s control, that could affect the scheme. ‘Accidents’ are an occurrence resulting from uncontrolled developments in the course of construction, operation, and decommissioning (e.g., major emission, fire or explosion). ‘Disasters’ are naturally occurring extreme weather events or ground related hazard events (e.g., subsidence, landslide, earthquake). Regulation 5(4) and paragraph 8 of Schedule 4 to the EIA Regulations requires consideration to be given to the risks of major accidents and disasters, but the Regulations do not include a definition of these terms.
- 16.2.9. Major events therefore includes both man-made and naturally occurring events. The assessment of the reasonably foreseeable worst-case environmental consequence is the likelihood for significant effects.
- 16.2.10. The development is not likely to cause a significant accident or risk of disaster during either the construction, operation or decommissioning phases. In the context of this section, as set out in the IEMA’s guide Major Accidents and Disasters in EIA: Typical methods employed within EIA to define significance are not applicable. By definition, a major accident or disaster would have a significant effect on the environment. Accordingly, any risks that could result in a major accident or disaster without suitable mitigation, management or regulatory controls in place will be assessed as significant.
- 16.2.11. The significance criteria for major accidents and disasters has therefore been based on professional judgement of the Applicant and their consultant team. This is an accepted approach as set out in the IEMA’s guide Major Accidents and Disasters in EIA: A Primer, dated

September 2020. The IEMA 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”. The IEMA continues to define significant environmental effect (in relation to a major accidents and/or disasters assessment 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”.

16.2.12. With regards to vulnerability, low consequence events do not meet the definition of major accidents or disasters. For example, minor spills which may occur during construction, but would be limited and temporary in nature would not meet the definition of a major accident. These low consequence / or low risk events would not threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment that require the use of resources beyond those of the client or its appointed representatives to manage. These have therefore been scoped out of the assessment and would be dealt with at the appropriate time.

16.2.13. The risks and potential effects that are knowingly caused by the development which can be quantified and assessed, such as noise and potential for traffic accidents are also taken into account within other documents supporting the application and as such haven't been replicated in the Major Accidents and Disasters assessment. Such events would also be dealt with under the Applicant's compliance with environmental working practices and legislative requirements, including: –

- Construction (Design and Management) Regulations 2015. The Construction (Design and Management) Regulations 2015 (CDM Regulations) place legal duties on almost all parties involved in construction work. The regulations place specific duties on clients, designers and contractors, so that health and safety is taken into account throughout the life of a construction project from its inception to its subsequent final demolition and removal. Under the CDM Regulations, designers have to avoid foreseeable risks so far as is reasonably practicable by eliminating hazards during the three phases of development namely, the construction phase, its proposed use / operational phase; and, subsequent demolition / site restoration.
- Management of Health and Safety at Work Regulations 1999 – The Management of Health and Safety at Work Regulations 1999 reinforce employer's duties to manage health and safety and apply to all work activities. The principal of risk based assessment provides the cornerstone for management of health and safety and all employers are required to undertake risk assessments.
- Health and Safety at Work etc. Act 1974 – The Health and Safety at Work etc. Act 1974 provides the framework for the regulation of workplace health and safety in the UK. It places general duties on employers, people in control of premises, manufacturers and employees. The overriding principle is that foreseeable risks to persons will be reduced so far as is reasonably practicable.

Table 16.2: Long list of potential Major Accidents and Disasters associated with Scheme

Risk	Potential Risk and Receptor	Applicant Response
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Health and Safety at Work	Risk of accidents for workers during the construction and decommissioning of the Proposed Development.	Shortlisted and considered further in this section of the Chapter.
Flooding	Risk of flooding within order limits and its potential to exacerbate flooding to nearby properties & infrastructure	This is assessed within chapter 9 Water Resource of the draft PEIR. The scheme will have flood resilience embedded from the outset and this is discussed within chapter 10 of the draft PEIR.
Fire	Risk of fire from development	Shortlisted and considered further in this section of the Chapter.
Road accidents	Risk to road users in the area from increased traffic and slow-moving vehicles.	This is assessed within Chapter 12 Transport and access of the draft PEIR.
	Risk posed by spillage of hazardous loads from road traffic accidents during construction/decommissioning on the environment	This will be assessed within the next iteration of Chapter 12 Nature Conservation and Biodiversity of the PEIR.
	Risk from glint and glare to affect road users	Risk from glint and glare will be assessed within the next iteration of the PEIR.
Trenchless works affecting the integrity of the rail, canal and highway	Risk of accident as a result of the cable route affecting the integrity of existing infrastructure of railway, canal and motorway.	Shortlisted and considered further in this section of the Chapter.
Aviation accidents	Risk from glint and glare to affect pilots and aircraft	Aviation will be considered in the next iteration of the PEIR.
Utilities failure	Risk of utilities failure to affect employees and local residents	Shortlisted and considered further in this section of the Chapter.
Plant disease	Biosecurity risks from new planting to habitats and species	This will be assessed within the next iteration of Chapter 7 Nature Conservation and Biodiversity of the PEIR.

<p>Criminal damage</p>	<p>Risk of sabotage/criminal activity and the effects of preplanned damage to the Proposed Development.</p>	<p>Shortlisted and considered further in this section of the Chapter.</p>
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16.2.14. The following shortlisted major accidents and disasters to be considered further in this iteration of the PEIR are:

- Health and Safety at Work
- Trenchless works and existing Infrastructure
- Fire
- Utilities failure (gas, electricity, water, sewage, oil, communications); and
- Criminal Damage

Baseline conditions

16.2.15. A number of receptors are present in the vicinity of the Scheme which could be vulnerable to major accidents or disasters, either because of their proximity to the Scheme or their importance to the surrounding area. These include: -

- Towns, villages, and isolated dwellings / farmhouses
- Commercial sites and buildings, including the Tween Bridge Wind Farm.
- Roads (including a strategic road network and primary road networks)
- Railway
- Canal
- Public Right of Ways
- Designated ecological sites, woodland, farmland, and waterbodies;
- Underground infrastructure services including electricity, water, communications, and gas.

16.2.16. Details of the specific receptors that fall into the above categories are provided within **Chapter 4 Site Description**.

Assessment of Potential for scheme to cause major accidents and disasters

Construction and decommissioning phase

Health and Safety

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16.2.17. The risk both to construction workers and the general public is low and not significant during the construction and decommissioning phases. This would be regulated by the Health and Safety Regulations and the construction (Design and Management) Regulations 2015. The construction phase would be managed in accordance with the Health and Safety at Work Act 1974 and would comply with all other relevant Health and Safety Regulations, including the Construction (Health, Safety and Welfare) Regulations 1996 and Electricity Safety, Quality and Continuity Regulations 2002. Construction work that is managed and complies with the above set of regulations will reduce the risk to workers due to the legal protection required by these.

Trenchless Works and Existing Infrastructure

16.2.18. The cable route would need to cross existing infrastructure, which include the railway line connecting Doncaster to Scunthorpe, the Keadby Canal and the M180. Trenchless techniques, such as drilling, will be used to construct the crossing of the cable route; therefore, the works will be undertaken deep below the crossing and a distance either side, not interfering with the operations of the existing. The construction and decommissioning of the underground cable crossing will be managed to the specific requirements for the relevant party and therefore the risk of a rail accident as a result of the crossing will be minimised. Therefore, **no significant effects** on rail accidents are anticipated. The applicant will seek to enter into discussion with Network Rail, Canal Trust and National Highway during the informal consultation phase for the purpose of agreeing the relevant easement requirements and put in place the protective provisions to be included in the DCO for the benefit of the relevant parties.

Fire

16.2.19. Health and Safety on-site would be managed by the contractor during construction and decommissioning to mitigate the risk of equipment failure that could lead to a fire risk in line with legislative safety requirements.

16.2.20. The risk of fire from battery energy storage system is low, and to a lesser extent for workers during the construction and decommissioning phase that onsite employees during the operational phase. The BESS will be containerised and will arrive on site as modular units. The can also be carted off site as modular units at time of decommissioning. This significantly reduces the risk of damage during installation.

16.2.21. The risk of fire is therefore anticipate to be small and the Applicant will keep this under review until the detailed design stage. With the above embedded mitigation, no significant effects are anticipated and the risk of fire would be unlikely.

Utilities failure

16.2.22. The potential exists for utilities to be affected during the construction of the Scheme through damage caused as a result of excavation and engineering operations. Without any precautionary measures to avoid damage to utilities, this could lead to a short-term adverse effect. Precautionary measures have been included as part of the embedded mitigation for the scheme.

16.2.23. These include:

- Appropriate easement to the existing National Grid high voltage electricity overhead lines (400KV Drax to Keadby electricity transmission) including a 15m tower stand off in accordance with National Grid requirements.

- The applicant will seek to enter into discussion with National Grid during the informal consultation phase for the purpose of agreeing the relevant easement requirements and the protective provisions to protect National Grid's assets within the order limits.

16.2.24. These measures would reduce the likelihood of effects on utilities during construction. continued assessment will include determining potential impacts on other utility infrastructure within the Order Limits.

16.2.25. The decommissioning phase would require below ground works to remove the onsite infrastructure; however, the grid connection cables will typically remain in situ. Works would be undertaken within the footprint excavated during construction. The embedded mitigation measures used during construction would also apply during decommissioning and therefore no adverse effects are predicted during decommissioning. Work is ongoing to identify all the underground utilities within and adjoining the site.

Criminal Damage

16.2.26. It is anticipated that the development areas would be managed by the contractor during construction and decommissioning to mitigate the risk of criminal activity. The design will include safety measures to protect the site from criminal damage, such as CCTV and night watchmen and potential arrangements will be explored within the Design and Access Statement that will be prepared to accompany the statutory consultation phase and subsequent application. Therefore, the Scheme is expected to have no significant effect on the environment as a result of criminal damage during construction and decommissioning.

Operational Phase

Health and Safety

16.2.27. The Scheme would operate in accordance with the Health and Safety Executive 'Health and safety in the new energy economy: Meeting the challenge of major change' published in August 2010.

16.2.28. Traffic during the operational phase will consist of movements by staff that will supervise the operation and maintenance of the Scheme, and those that attend the sheep as the pasture around the solar array will form part of any sheep farming enterprise. This is unlikely to involve HGVs and considered to be of negligible magnitude, and hence any related effects will be not significant.

Trenchless Works and Existing Infrastructure

16.2.29. Trenchless techniques, such as drilling, will be used to construct the crossing of the cable route under the railway, canal and M180 during the construction phase of the scheme. The works will be undertaken deep below the crossing and a distance either side, not interfering with the operations of transport mode. The underground cable crossing will be designed to meet the specific requirements of the relevant parties and therefore the risk of accident to users of the transport node as a result of the works will be minimised. No ongoing management of the cable route is expected during the operational phase and therefore, no significant effects on existing infrastructure are anticipated.

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Fire

16.2.30. To protect the battery energy storage system, it will be equipped with an FFSS (Fire Fighting Suppression System) inside each container. An FFSS includes a smoke detector, control panel, alarm device, exhaust pipe and bump head. It uses a clean fire suppression gas to minimize the second loss. Before gas blow-out, the system controller will send a signal to the HVAC main power switch to stop working as well as isolating the fans and thus achieve fire suppression process. The applicant will continue to monitor developments in technological and regulatory advancements for BESS to ensure that the final design of the BESS complies with any future amendments to the minimum fire and safety standards. The guidance documents that will be relevant for the final design are:-

- Allianz Risk Consulting (ARC), Tech Talk Volume 26 (2019). Battery Energy Storage Systems (BESS) using Li-ion batteries¹
- Institute of Engineering and Technology – Code of Practice for Electrical Energy Storage Systems (August 2017)
- The Energy Institute: Battery Storage Guidance Note 1 – Battery Storage Planning (August 2019)
- Safety requirements for grid-integrated EES systems – Electrochemicalbased systems. IEC 62933-5-2:2020
- National Fire Protection Association (NFPA) 855, Standard for the Installation of Stationary Energy Storage Systems, 2020 edition
- UN 'Recommendations on the Transport of Dangerous Goods' – Section 38.3 covers Lithium-Ion Batteries.

16.2.31. Therefore, the Scheme is expected to have no significant effect on the environment due to the risk of a major accident occurring as a result of fire.

Utilities failure

16.2.32. Existing utilities traversing the site include overhead pylons. The design of the scheme will provide appropriate buffers and the applicant will seek to discuss and agree the relevant provisions during the consultation stage. The operators will run their own maintenance programme which will include their own Health and Safety programme and procedures to implement. Through careful design consideration of the scheme, and operators following implemented site management and Health and Safety procedures, the risk of impact is considered unlikely and not significant. Additionally, effects on utilities are predicted unlikely during the operational phase of the Scheme as no additional engineering works / below ground works will normally be required during operation.

Criminal damage

16.2.33. If the Scheme were to be damaged through pre-planned criminal activity, the risk of a major accident occurring on site may increase. The design will ensure that the compounds and solar equipment are secure to minimise the potential for damage to occur through criminal activity. Embedded mitigation will include fencing, CCTV cameras and lighting in critical areas.

- 16.2.34. There will also be a commissioning phase of testing undertaken prior to the operation phase to ensure that all equipment is operating correctly. The scheme will be remotely managed and this will include intruder security alert. Furthermore, the scheme does not process or include large scale chemicals and criminal damage to the infrastructure is unlikely to lead to a large-scale leak, explosion, or other major event. Therefore, the Scheme is expected to have no significant effect on the environment due to the risk of a major accident occurring as a result of criminal activity during operation.

Residual Effects

- 16.2.35. Given the nature of accidents and disasters, there is the potential for significant effects if an event does occur, however, the assessment has concluded that the risk of such events occurring is low for the scheme, and no significant effects on the environment are therefore anticipated. On the rare occasion that a major accident or disaster does occur, the significance of the effect would correlate to the scale of the major accident or disaster event.
- 16.2.36. The focus is on prevention of major accidents and disasters, and mitigation if an event does occur. Taking into account the good industry practice and the proposed embedded design mitigation measured discussed above, the risk of accidents and disaster events at the scheme is considered low. However, the assessment has concluded that the risk of such events occurring is low.

Cumulative Effects

- 16.2.37. The consideration of cumulative effects will be presented within the next iteration of the PEIR.

16.3. Waste

- 16.3.1. This section sets out the approach to waste management. 'Waste' is defined as materials that are unwanted, having been left over after the completion of a process which would otherwise be discarded. The legal definition of waste also covers substances or objects, which fall outside of the commercial cycle or out of the chain of utility. In particular, most items that are sold or taken off site for recycling are wastes, as they require treatment before they can be resold or reused.
- 16.3.2. In practical terms, wastes include surplus spoil, scrap, recovered spills, unwanted surplus materials, packaging, office waste, wastewater, broken, worn-out, contaminated or otherwise spoiled plant, equipment and materials.
- 16.3.3. Waste minimisation is the process of reducing the quantity of such materials arising, requiring processing and/or disposal. The waste hierarchy ranks waste management options according to what is best for the environment. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal.
- 16.3.4. The priority at the scheme will not be producing waste in the first place. To do this, the waste implications of the proposals need to be considered at the earliest possible stage.
- 16.3.5. There are no accepted criteria for determining the value (sensitivity) of construction waste arisings (including waste infrastructure). In the absence of such guidance, the materials assessment has been undertaken using professional judgement of material resources and waste

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specialists. Professional judgement has been applied to determine the likely significance of effects. Overall, the fundamental purpose of a waste management assessment is to characterise waste types and arisings and to identify the existing and potential methods employed for their management.

16.3.6. The significance of the effect (whether beneficial or adverse) is largely conditioned by the type, location and capacity of local and regional waste management facilities and their ability to manage waste in an environmentally responsible way.

Policy Context

16.3.7. The extant Overarching National Policy Statement for Energy EN-1 considers Waste Management at paragraph 5.14 and the draft Overarching National Policy Statement EN-1 considers Resource and Waste Management at paragraph 5.15. The extant and draft EN-1 sets out the assessment requirements which applicants should consider with regards to waste arisings for the construction and operational phase of development.

16.3.8. The draft NPS EN-1, notes at 5.14.2, how sustainable waste management is to be implemented through the waste hierarchy setting out the priorities that must be applied when managing waste. This is also reflected at 5.15.2 of dNPS EN-1 and lists the priorities that must be applied when managing waste, these are (in hierarchy): -

- prevention
- preparing for reuse
- recycling
- other recovery, including energy recovery
- disposal

16.3.9. NPS EN-3 and dNPS EN-3 sets out additional technology specific waste management considerations. There are no such additional requirements for solar.

Scoping Criteria

16.3.10. The following waste related comments were provided in the Planning Inspectorate Scoping Opinion dated 14 March 2023.

Table 16.3 Extract of aspect based scoping table from Scoping Opinion for Tween Bridge Solar Farm

ID	REF	MATTER	PLANNING INSPECTORATE COMMENTS	APPLICANT'S RESPONSE
3.4.1	Table 3.4	Waste	The Scoping Report proposes that impacts associated with waste will be assessed within ES Chapter 16 ('Other Environmental Topics'),	The applicant confirms that the chapter 16 follows

			rather than in a standalone ES Chapter. The Inspectorate has considered the nature and characteristics of the Proposed Development and is content with this approach.	the approach set out in the scoping opinion.
3.4.2	Table 3.4	Impacts associated with waste during operational phase	Having regard to the nature and characteristics of the Proposed Development, the Inspectorate is content that impacts associated with waste produced during the operational phase are not likely to result in significant effects. This matter can be scoped out of the ES.	Operational waste has been scoped out of the ES and therefore not covered by this PEIR.

Assessment Methodologies

16.3.11. Waste streams and quantities have been estimated using waste management records for other solar development which are based on activities, material requirements and staff requirements during the construction phase. This is considered in relation to the waste hierarchy of minimising, reducing and re-use of waste as appropriate.

Baseline Conditions

16.3.12. There are 19 landowners with land within the Draft Order Limits. Almost all of the land is in arable farming use, by a mixture of tenures and management methods. Potential waste streams currently could include left over crop and straw bales, fertiliser sacks and chemical containers. Spreading of organic manure and slurries has taken place in the draft order limits.

Waste Arisings & Assessment of Potential Effects

16.3.13. The nature of the scheme and the known construction processes indicate no significant quantities of waste are anticipated.

16.3.14. Overall, the fundamental purpose of a waste management assessment is to characterise waste types and arisings and to identify the existing and potential methods employed for their management. The significance of the effect (whether beneficial or adverse) is largely conditioned by the type, location and capacity of local and regional waste management facilities and their ability to manage waste in an environmentally responsible way. Given the nature of the Development and the construction process no significant quantities of waste are anticipated.

16.3.15. Exact quantities and types of waste likely to be generated during the construction phase are unknown, however it is expected that waste streams could include:

- Welfare facility waste;
- Waste chemicals, fuels and oils;
- Waste metals (iron and steel);

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- Waste water from dewatering of excavations;
- Waste water from cleaning activities (e.g., wheel wash);
- Packaging; and
- General construction waste (paper, cardboard, wood, etc.)

16.3.16. The solar photovoltaic components will be delivered to site for assembly and installation (solar modules, mounting structures, fence posts and fencing). The battery units would arrive as modular units.

16.3.17. The predicted quantities are set out below and are based on the construction waste management records of a 25MW solar scheme. This is presented at Table 16.4. The total vehicle movement linked to transporting the waste arisings off site represent a worst case scenario and it is expected that, in line with good practice that the number of journeys would be less as vehicles would double up on journeys (i.e drop off empty skips and pick up full skips in one movement). The applicant will undertake additional assessment on this matter and this will be reported in the next iteration of the PEIR.

Table 16.4 Predicted waste quantities during construction

Category	Type	Waste arising recorded from a 25MW solar project	Predicted estimates for the Scheme
General Waste Exchange	12 yard skip (3.9m by 2m and 2m tall)	12	388
General Waste Exchange	Roll on Roll off (RoRo) 20 yard skip (6.2m long, 2.4m wide and 1.5m tall)	23	744
Timber Exchange	RoRo 20 yard skip	33	1067
Card / Paper exchange	RoRo 20 yard skip	12	388
Metal waste exchange	RoRo – 20 yard	6	194
Recyclable plastics	12 yard skip	2	65
Total skips		88	2846

- 16.3.18. During the decommissioning phase, it is expected that a number of waste streams will be created that will be managed using the principles of the waste hierarchy. They are likely to include the following: •
- Solar panels and mounting structures;
 - Waste materials from foundations;
 - Electrical equipment;
 - Energy Storage System i.e., batteries;
 - Cables;
 - Welfare facility waste;
 - Waste chemicals, fuels and oils;
 - Waste metals;
 - Waste water from dewatering of excavations; and
 - Wastewater from cleaning activities (e.g., wheel wash).
- 16.3.19. With reference to the waste hierarchy, the photovoltaic modules will be recycled or reused, where possible. With regards to the supporting structures, the structures will be unscrewed/unbolted, and then removed from the ground using a piling machine. Once the supporting structures have been removed, they will either be re-used or recycled, where possible. Only a small amount of backfilling will be required to fill the holes of the supporting structures. The Applicant's commitments towards waste management will be set out within the Outline Construction Environmental Management Plan and Outline Waste Management Plan.
- 16.3.20. Other associated infrastructure, such as the inverters will be removed from their concrete foundations and will be transported via HGVs off site. The equipment will either be re-used or recycled, where possible.
- 16.3.21. When removing the substation infrastructure, such as transformers, they will be loaded onto an abnormal indivisible load vehicle (AILs) and removed from site in much the same way as it was delivered to site. The area will be returned to its former condition and the transformers are likely to be refurbished and re-used on another site or taken to a recycling facility.
- 16.3.22. Recycling of all materials after end use will include panels (which are covered by the Waste Electrical and Electronic Equipment Directive), screws, mounting frames and wiring. Any non-recyclable waste will be stored in a skip for regular removal for disposal. Restoring the site will involve some minor ground works and would be controlled by a Decommissioning Plan and a Soil Management Plan.
- 16.3.23. All waste arisings transported off site would be delivered to the appropriately licenced receivers of such materials. Operators receiving any waste arisings would be subject to their own consenting procedures. It is not possible to forecast the capacity for final disposal for decommissioning at this stage due to potential change in waste regulations and legislation and generation and operators at that time.

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Cumulative Effects

16.3.24. The consideration of cumulative effects will be presented within the next iteration of the PEIR.

