# Green Hill Solar Farm
## EN010170

# Environmental Statement
# Chapter 23: Major Accidents and Disaster

Prepared by: Lanpro

Date: May 2025

Document Reference: APP/GH6.2.23

APFP Regulation 5(2)(a)

# Contents

# Issue Sheet

Report Prepared for: Green Hill Solar Farm

DCO Submission

## Chapter 23: Major Accidents and Disaster

| Prepared by |
|---|
| Name: Charlotte Astrella |
| Job title: Senior EIA Consultant |

| Approved by |
|---|
| Name: Tara Chopra |
| Job title: Technical Director – EIA and Major Infrastructure |

| Revision | Date | Prepared by | Approved by |
|---|---|---|---|
| Original | 23/05/2025 | CA | TC |

# 23 Major and Disasters

## 23.1 Introduction

23.1.1 This chapter presents the findings of the Environmental Impact Assessment (EIA) concerning the potential major accidents and disasters impacts of the Scheme during the construction, operation and maintenance, and decommissioning phases.

23.1.2 The following aspects will be considered within the major accidents and disasters assessment process:

- The potential effects of the Scheme on the environment deriving from its vulnerability to risks of relevant major accidents and/or disasters;
- The potential effects of the Scheme interacting with any sources of external hazards; and
- The potential effects of an external major accident and/or disaster and risk to environmental receptors.

23.1.3 For project description details, please refer to Chapter 4: Scheme Description [**EN010170/APP/GH6.2.4**] of this Environmental Statement (ES).

23.1.4 This chapter have been prepared by Lanpro (see Statement of Competence [**EN010170/APP/GH6.3.1.1**]).

23.1.5 This chapter is supported by the following tables:

- **Table 23.1: Relevant Scoping Opinion Comments**
- **Table 23.2: Statutory Consultation Comments**
- **Table 23.3: Major Accidents or Disasters Shortlisted for Further Consideration**
- **Table 23.4: Criteria for Assessing Sensitivity Receptors**
- **Table 23.5: Criteria for Assessing Magnitude of Impacts (Positive or Negative)**
- **Table 23.6: Criteria for Assessing the Significance of Effects**
- **Table 23.7: Summary of Residual Effects for Major Accidents and Disasters**

## 23.2 Consultation

### Scoping Opinion

23.2.1 An EIA Scoping Report was submitted to the Planning Inspectorate (PINS) in July 2024 (Ref 23.1), with a formal request for a Scoping Opinion. PINS subsequently issued the Scoping Opinion on 30 August 2024. **Table 23.1** outlines the Scoping Opinion responses relating to Major Accidents and Disasters and how these have been addressed through the ES.

**Table 23.1: Relevant Scoping Opinion Comments**

| Consultee and Date | Comment | How had the comment been addressed | Location of response in chapter |
|---|---|---|---|
| The Planning Inspectorate<br><br>Scoping Opinion<br><br>30 August 2024 | A standalone Chapter for MA&D is proposed to be scoped out on the basis that potential MA&D will be assessed in other ES chapters where relevant. The shortlist of MA&D to be considered in the EIA contained in Table 22 does not identify the relevant chapter(s) for all of those and none of the SR technical chapters make any reference to consideration of MA&D.<br><br>The Inspectorate notes that the proposed site boundary falls within the consultation zones of one major accident hazard site (MAHS) and three major accident hazard pipelines (MAHPs) The Applicant's attention is drawn to the Health and Safety Executive's and Northern Gas Networks' consultation response contained in Appendix 2 of this Opinion in this regard.<br><br>The potential for fire resulting from the battery storage component of the Proposed | Major Accidents and Disasters have been scoped into a stand-alone chapter.<br><br>The MAHS site and three MAHPs have been assessed within the chapter.<br><br>Battery fire has been assessed. An Outline Battery Storage Safety Management Plan has been prepared.<br><br>Chapter 16: Air Quality also includes an assessment of BESS fire emissions considering the effects from BESS fires on nearby sensitive receptors which is referred to within this Chapter.<br><br>The assessment includes risk associated with UXO,with reference to | See Section 23.8 of this Chapter for the assessment of impacts and effects with consideration to MAHS and battery fire.<br><br>An Outline Battery Storage Safety Management Plan [**EN010170/APP/GH7.7**] will be submitted to support the DCO application. The risk of fire associated with battery storage is also assessed in this chapter and Chapter 16: Air Quality [**EN010170/APP/GH6.2.16**].<br><br>A UXO assessment is included in Chapter 22: Ground Conditions and Contamination [**EN010170/APP/GH6.2.22**]. |

| Consultee and Date | Comment | How had the comment been addressed | Location of response in chapter |
|---|---|---|---|
| | Development is included in the shortlist. However, it is unclear where in the ES the risk of fire would be assessed. The Inspectorate notes that an outline Battery Safety Management Plan is proposed to be submitted with the DCO application. The risk of fire associated with battery storage facilities should be assessed in the ES and relevant mitigation, such as fire-fighting and containment measures, should be set out therein and secured in the DCO, with reference to the proposed Battery Safety Management Plan.<br><br>No reference is made to MA&D in respect of UXO, although the 'Detailed UXO Risk Assessment' report contained in Appendix 10 identifies the risk from allied ordnance on Site G as 'Medium' and recommends the implementation of a UXO Risk Management Plan. MA&D impacts resulting from UXO should be considered in the ES and an assessment provided where significant | Chapter 22: Ground Conditions and Contamination.<br><br>Within the Scoping Report, no text is missing from paragraph 22.4.5. At the time of when the Scoping Report was written it was assumed that Major Accidents and Disasters could be scoped out with those shortlisted to be considered within the relevant topics of the EIA. However, Major Accidents and Disasters has since been scoped into assessment. | |

| Consultee and Date | Comment | How had the comment been addressed | Location of response in chapter |
|---|---|---|---|
| | effects are likely to occur.<br><br>Text appears to be missing from para 22.4.5 and the final sentence suggests that the intention may have been to identify some MA&D matters proposed to be scoped out. The Inspectorate notes that Table 22.3 identifies MA&D as an aspect to be scoped out.<br><br>Based on the above, and in the absence of evidence demonstrating no LSE and/or clear agreement of the conclusion with relevant statutory bodies, the Inspectorate is not in a position to agree to scope out a standalone chapter for MA&D. Accordingly, the ES should include a discrete chapter that identifies potential impacts and provides an assessment where significant effects may occur or evidence of the absence of a LSE and agreement with the relevant consultation bodies. | | |
| Health and Safety Executive | According to HSE's records, the proposed DCO application boundary for this | Major accident site and three major accident hazard | See Section 23.8 of this Chapter. |

| Consultee and Date | Comment | How had the comment been addressed | Location of response in chapter |
|---|---|---|---|
| Scoping Opinion<br>30 August 2024 | Nationally Significant Infrastructure Project is within the consultation zones of a major accident hazard site ['MAHS'] and three major accident hazard pipelines ['MAHP']. | pipelines have been considered within this Chapter. | |
| Northern Gas Networks<br>Scoping Opinion<br>30th August 2024 | NGN has a number of gas assets in the vicinity of some of the identified "site development" locations. It is a possibility that some of these sites could be recorded as Major Accident Hazard Pipelines(MAHP), whilst other sites could contain High Pressure gas and as such there are Industry recognised restrictions associated to these installations which would effectively preclude close and certain types of development. The regulations now include "Population Density Restrictions" or limits within certain distances of some of our "HP" assets.<br>The gas assets mentioned above form part of the Northern Gas Networks "bulk supply" High Pressure Gas Transmission" system and are registered | Three major accident hazard pipelines have been considered within this assessment.<br>**Chapter 24: Other Environmental Matters**, Section 24.5 consider the location of these assets and outlines mitigation measures. | See Section 23.8 of this Chapter.<br>See Chapter 24: Other Environmental Matters [**EN010170/APP/GH6.2.24**]. |

| Consultee and Date | Comment | How had the comment been addressed | Location of response in chapter |
|---|---|---|---|
| | with the HSE as Major Accident Hazard Pipelines. Any damage or disruption to these assets is likely to give rise to grave safety, environmental and security of supply issues. NGN would expect you or anyone involved with the site (or any future developer) to take these restrictions into account and apply them as necessary in consultation with ourselves. We would be happy to discuss specific sites further or provide more details at your locations as necessary. | | |

## Statutory Consultation

23.2.2 Further consultation in response to formal pre-application engagement was undertaken through the Preliminary Environmental Information Report (PEIR). **Table 23.2** outlines the statutory consultation responses relating to Major Accidents and Disasters and how these have been addressed through the ES.

23.2.3 Responses to the Statutory Consultation are outlined in the Consultation Report [**EN010170/APP/GH5.1**].

**Table 23.2: Statutory Consultation Comments**

| Consultee and Date | Comments | How has this comment been addressed | Location of response in the ES |
|---|---|---|---|
| Bedford Borough Council<br>18 December 2024 | As noted in BBC's Scoping Response, BBC expresses significant concern to the location on the | This Chapter includes an assessment of flood risk and battery fire. | Chapter 10: Hydrology, Flood Risk and Drainage [**EN010170/APP/GH6.2.10**]. |

| Consultee and Date | Comments | How has this comment been addressed | Location of response in the ES |
|---|---|---|---|
| | BESS facility within Flood Zone 3 and directly adjacent to the Upper Nene Valley Gravel Pits site. BBC is NOT supportive of the Proposer's statement | Reference is made to Chapter 10: Hydrology, Flood Risk and Drainage where modelling has been completed to model the flood risk associated with Green Hill BESS.<br>Chapter 9: Ecology and Biodiversity and Chapter 22: Ground Conditions and Contamination also consider potential impacts to the Upper Nene Valley Gravel Pits. | Chapter 9: Ecology and Biodiversity [**EN010170/APP/GH6.2.9**]<br>Chapter 22: Ground Conditions and Contamination [**EN010170/APP/GH6.2.22** ] |
| Bedford Borough Council<br>18 December 2024 | The omission of the effect of a BESS fire on public health and safety and environmental impact is noticeable. While a BESS fire is considered rare, its severity is considered significant. In light of the fact that the Promotor's BESS facility will be located 1.2km from Grendon and 2.7km from Earls Barton, both urban | An assessment of Fires has been carried out in section 23.8 considering impacts on public health and safety. | Section 23.8 of this Chapter. |

| Consultee and Date | Comments | How has this comment been addressed | Location of response in the ES |
|---|---|---|---|
| | settlements, this matter needs some address in terms of wind-borne fire/ lithium particles. | | |
| Bedford Borough Council<br>18 December 2024 | The Institute of Environmental Management and Assessment defines major accident and/or risk 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'. This should be read alongside the Chief Fire Officer's Guidelines. It is therefore incumbent on | An assessment of mitigation in relation to fire risk from battery storage has been assessed in the Outline Battery Storage Safety Management Plan. | Outline Battery Storage Safety Management Plan **[EN010170/APP/GH7.7]** |

| Consultee and Date | Comments | How has this comment been addressed | Location of response in the ES |
|---|---|---|---|
| | the Promotor to prepare a management plan relating to BESS fire risk, in consultation with the relevant Fire and Safety authorities. | | |
| Bozeat Parish Council | The PEIR suggests that BESS fires would only last for a few hours. The Liverpool fire lasted for nearly three days and the DCO should include a safety plan that could cope with a fire of that duration. | An assessment of mitigation in relation to fire risk from battery storage has been assessed in the Outline Battery Storage Safety Management Plan. | Outline Battery Storage Safety Management Plan **[EN010170/APP/GH7.7]** |
| Environment Agency<br><br>24 January 2025 | The first point mentions a battery safety management plan (BSMP), identified in the Scoping Report in 8.4.2 and 22.4.5 Table 22. The commitment to a BSMP is no re-confirmed or mentioned alongside other relevant commentary in chapter 1-6, 22, or elsewhere in 23.<br><br>Confirm that there is still an intention to | An Outline Battery Storage Safety Management Plan has been prepared and is provided with the Application and is to be secured by requirement in the DCO.<br><br>The management plan will be updated and maintained as a 'live document' throughout the operational phase of the Scheme. | Outline Battery Storage Safety Management Plan **[EN010170/APP/GH7.7]** |

| Consultee and Date | Comments | How has this comment been addressed | Location of response in the ES |
|---|---|---|---|
| | complete a BSMP. Update<br>relevant sections of the report. Provide an outline BSMP with the ES. | | |
| Environment Agency<br>24 January 2025 | This section considers existing baseline conditions and states “Impacts from fires and explosions related to the scheme will impact on air quality and human health receptors”. We consider that fires would also affect ecology, hydrology and hydrogeology, but this is not mentioned.<br>Include impacts from fires and explosions on all receptors, including ecology, hydrology and hydrogeology. | The assessment of impacts has considered ecology, hydrology and hydrogeology in line with the relevant topic chapters. | Section 23.8 of this Chapter. |
| Environment Agency<br>24 January 2025 | Surface water and groundwater are not listed as specific receptors. We consider that they cannot conclusively be assumed from “land and soil”. | The assessment of impacts has considered impacts to ground and surface water, which has been further considered in the event of a fire. | Chapter 22: Ground Conditions and Contamination [**EN010170/APP/GH6.2.22**]. |

| Consultee and Date | Comments | How has this comment been addressed | Location of response in the ES |
|---|---|---|---|
| | As a result, these receptors are not discussed in Table 23.6. There appears to be no consideration of flood impacts affecting the natural environment. There is no mention of firewater runoff or containment.<br><br>There is no mention of habitat damage or loss Section 23.9.3 states: "A detailed assessment on major accidents and disasters will be included in the ES". Include these matters in that assessment | | |
| The Countryside Charity Northamptonshire | As noted under comments in Chapter 16 Air Quality, BESS fires can last for several days. The safety plan must incorporate detailed plans to deal with BESS fires and how contamination can be contained and prevented from leaving the site. | An Outline Battery Storage Safety Management Plan has been prepared and is provided with the Application and is to be secured by requirement in the DCO.<br><br>The management plan will be updated and maintained as a 'live document' throughout the | Outline Battery Storage Safety Management Plan [**EN010170/APP/GH7.7**]. |

| Consultee and Date | Comments | How has this comment been addressed | Location of response in the ES |
|---|---|---|---|
| | | operational phase of the Scheme. | |
| North Northamptonshire Council | It is noted that a series of management plans will be submitted with the DCO application, including a CEMP, OEMP, outline battery fire safety management plan and decommissioning statement. However, a further risk assessment will need to be carried out once the Cable Route Corridor Search has been completed. | The assessment has been completed and updated to consider the Scheme including the Cable Route Corridor. | Draft DCO **[EN010170/APP/GH3.1].** |
| North Northamptonshire Council | As the Scheme develops, NNC would expect the Applicant to continue to have regard to National Fire Chiefs Council (NFCC) guidance around grid-scale energy storage systems. | The Outline Battery Storage Safety Management Plan and Scheme design has been prepared in consultation with Northamptonshire Fire and Rescue Service as well as with consideration towards relevant legislation and guidance such as NFCC guidance. | Outline Battery Storage Safety Management Plan [**EN010170/APP/GH7.7**]. |

## 23.3 Legislation, Planning Policy and Guidance

23.3.1 This section provides an overview of the legislation, planning policy and guidance against which the Scheme will be considered for Major Accidents and Disasters.

### Legislation

**Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 23.2)**

23.3.2 Under Schedule 3 of the EIA Regulations, the risks of major accidents and natural disasters relevant to the Scheme needs to be considered, with the following requirements set out:

> *"A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned…Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies."*

**Health and Safety at Work Act (1974) (Ref 23.3)**

23.3.3 The Act provides the framework for the regulation of workplace health and safety in the UK. The overriding principle is that foreseeable risks to persons in workplaces shall be reduced so far as is reasonably practicable and that adequate evidence shall be produced to demonstrate that this has been done.

**The Control of Major Accident Hazards Regulations 2015 (Ref 23.4)**

23.3.4 The Control of Major Accident Hazards Regulations (COMAH) are enforced 'aims to prevent and mitigate the effects of major accidents involving dangerous substances which can cause serious damage/harm to people and/or the environment. COMAH treats risks to the environment as seriously as those to people'. Key points of the COMAH regulations include general duties for operators, safety reporting, emergency plans and public information.

**Construction (Design and Management) Regulations 2015 (CDM Regulations) (Ref 23.5)**

23.3.5 The Construction (Design and Management) Regulations place specific duties on clients, designers and contractors so that health and safety is considered throughout the life of a construction development from planning and design to completion and maintenance. The regulations apply to all construction work.

**The Regulatory Reform (Fire Safety Order) 2005 (Ref 23.6)**

23.3.6 Provides a framework for regulating fire safety in all non-domestic premises including workplaces, commercial properties and communal areas used in common in England and Wales. Key provisions include risk assessments, fire safety measures, information and training and maintenance.

### Planning Policy

**National Planning Policy**

*Overarching National Policy Statement for Energy (EN-1) (Ref 23.7)*

23.3.7 NPS EN-1 highlights safety under section 4.13, although mainly applying to schemes which are subject to the COMAH Regulations; for example, schemes that handle or store large quantities of dangerous substances, such as: chemicals and explosives.

*National Planning Policy Framework (Ref 23.8)*

23.3.8 The NPPF refers at paragraph 102:

*"planning policies and decisions should promote public safety and take into account wider security and defence requirements by:*

*anticipating and addressing possible malicious threats and natural hazards, especially in locations where large numbers of people are expected to congregate. Policies for relevant areas (such as town centre and regeneration frameworks), and the layout and design of developments, should be informed by the most up-to-date information available from the police and other agencies about the nature of potential threats and their implications. This includes appropriate and proportionate steps that can be taken to reduce vulnerability, increase resilience and ensure public safety and security; and*

*recognising and supporting development required for operational defence and security purposes, and ensuring that operational sites are not affected adversely by the impact of other development proposed in the area."*

**Local Planning Policy**

*West Northamptonshire Joint Core Strategy Local Plan Part 1 (Adopted 2014)*

23.3.9 The Local Plan does not set out any principles or guidance for the assessment of major accidents and disasters. The Local Plan does consider risks and safety in the context of the following policies:

**Policy BN7 – Flood Risk**

*"Development proposals will comply with flood risk assessment and management requirements set out in the national planning policy framework and planning practice guidance and the west northamptonshire strategic flood risk assessments to address current and future flood risks with appropriate climate change allowances."*

**Policy BN9 – Planning for Pollution Control**

*"Proposals for new development which are likely to cause pollution or likely to result in exposure to sources of pollution or risks to safety will need to demonstrate that they provide opportunities to minimise and where possible reduce pollution issues that are a barrier to achieving sustainable development and healthy communities."*

**Policy BN10 – Ground Instability**

*"Development will be permitted on sites of unstable or potentially unstable land provided that:*

*1) the nature of the ground stability of the site has been assessed to the satisfaction of the determining planning authority and a ground stability report has been provided and agreed before the application is determined;*

*2) the development does not add to the instability of the site or surrounding land;*

*3) any required remedial works are implemented prior to occupation of development; and*

*4) the development of any required stabilisation measures are environmentally acceptable to the satisfaction of the determining authority."*

*North Northamptonshire Joint Core Strategy 2011-2031 (Adopted 2016)*

23.3.10 The Local Plan does not set out any principles or guidance for the assessment of major accidents and disasters. The Local Plan does consider risks and safety in the context of the following policies:

23.3.11 **Policy 5 – Water Environment, Resources and Flood Risk Management**

*"Development should contribute towards reducing the risk of flooding and to the protection and improvement of the quality of the water environment."*

23.3.12 **Policy 8 – North Northamptonshire Place Shaping Principles**

*"Ensure quality of life and safer and healthier communities by:*

*i. Protecting amenity by not resulting in an unacceptable impact on the amenities of future occupiers, neighbouring properties or the wider area, by reason of noise, vibration, smell, light or other pollution, loss of light or overlooking;*

*ii. Preventing both new and existing development from contributing to or being adversely affected by unacceptable levels of soil, air, light, water or noise pollution or land instability;*

*iii. Incorporate ecologically sensitive design and features for biodiversity to deliver 'Biodiversity by Design';*

*iv. Seeking to design out antisocial behaviour and crime and reduce the fear of crime through the creation of safe environments that benefit from natural surveillance, defensible spaces and other security measures having regard to the principles of the 'Secured by Design';*

*v. Proportionate and appropriate community and fire safety measures; and*

*vi. Incorporating flexible and resilient designs for buildings and their settings, including access to amenity space."*

*Milton Keynes Plan: MK 2016 to 2031 (Adopted 2019)*

23.3.13 The Local Plan does not set out any principles or guidance for the assessment of major accidents and disasters. The Local Plan does consider risks and safety in the context of the following policies:

**Policy FR1 - Managing Flood Risk**

*"All new development must incorporate a surface water drainage system with acceptable flood control and demonstrate that water supply, foul sewerage, and sewage treatment capacity is available or can be made available in time to serve the development. Suitable access is safeguarded for the maintenance of water supply and drainage infrastructure.*

*Plan: MK will seek to steer all new development towards areas with the lowest probability of flooding. The sequential approach to development, as set out in national guidance, will therefore be applied across the Borough, taking into account all sources of flooding as contained within the Council's Strategic Flood Risk Assessment (SFRA).*

*Development within areas of flood risk from any source of flooding will only be acceptable if it is clearly demonstrated that it is appropriate at that location, and that there are no suitable available alternative sites at a lower flood risk."*

**Guidance**

*IEMA (2020) Major Accidents and Disasters in EIA: An IEMA Primer (Ref 23.9)*

23.3.14 The aim of the Institute of Environmental Management and Assessment (IEMA) Major Accidents and Disasters in EIA Primer is to 'increase awareness of the major accidents and/or disasters EIA topic and its application. It offers an assessment methodology based on known current practice within the UK to date and identifies key terminology that can be used.'

*The National Fire Chiefs Council (2022) Grid Scale Battery Energy Storage Systems – Guidance for Fire and Rescue Services (Ref 23.10).*

23.3.15 The National Fire Chiefs Council (NFCC) guidance on Grid Scale Battery Energy Storage Systems (BESS) for Fire and Rescue Services provides comprehensive recommendations to ensure safety and effective response to incidents involving these BESS.

*Construction Industry Research and Information Association (CIRIA) (2009) C681:2009: Unexploded Ordnance (UXO) A Guide for the Construction Industry (2009)*

23.3.16 CIRIA 'C681:2009: Unexploded Ordnance (UXO) A Guide for the Construction Industry' guidance outlines best practice construction risk management processes to adopt in relation to UXO risk.

## 23.4 Assessment Methodology and Significance Criteria

23.4.1 IEMA guidance (Ref 23.9) define a major accident and disaster as the following:

- **Major Accidents**: "*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.*

*Major accidents can be caused by disasters resulting from both man-made and natural hazards*."

- **Disasters**: Can consist of a 'natural hazard', examples of these are landslides, flooding, earthquakes, strong winds or a 'Man-Made' hazard such as theft, acceleration of glint and glare from reflective surfaces, Unexploded Ordnance (UXO) and others. The hazard is determined to be a disaster by having the potential to cause an event or situation that meets the definition of a major accident.

23.4.2 The impact of major accidents and/ or disasters can be of varied significance. They have the potential to impact people, assets, property and the surrounding environment.

23.4.3 The MAD assessment identifies the potential for major accidents or disasters which have the potential to result in likely significant effects on human health and the natural and built environment. The threats identified may result in serious damage. Arrangements can be identified to reduce and manage the risk of potential hazards.

## Study Area

23.4.4 The Study Area includes any land uses or activities within the Order Limits during construction, operation and decommissioning. Additionally, external features beyond the Scheme's Order Limits that are likely to interact with the Scheme and required for assessment will also be considered.

23.4.5 The following influencing factors and associated distances from the Order Limits were adopted for setting the Study Area:

### Built Environment Features

- Airports and airfields within approximately 5km of the Order Limits (in line with the Study area defined for Chapter 15: Glint and Glare [**EN010170/APP/GH6.2.15**]);
- COMAH facilities within the Scheme Order Limits (distance to furthest COMAH installation centre point whose consultation zone overlaps the Scheme);
- Major Accident Hazard Pipelines (MAHP) within approximately 1km of the Order Limits (distance to furthest MAHP whose consultation zone overlaps the Scheme);
- Bulk fuel storage facilities (including Liquified Natural Gas, Liquified Petroleum Gas) within approximately 500m of the Sites;
- UXO as identified within the initial desk-based risk assessment; and
- Transmission lines (gas, electrical, oil/fuels) within the Order Limits.

### Natural Features

- Hydrological and geological features such as dam failure and seismic activity within 5km and hydrological and geological feature such as flood risk and unstable ground conditions within 1km.

23.4.6 The Study Area for each identified hazard and threat has been determined based on likely impact pathways, proximity of receptors, the potential scale of worst-case impacts from case-study incidents and professional judgment. Where practicable, approaches undertaken for similar scale schemes have been utilised.

23.4.7 External features that may present a hazard to the Scheme have been considered where there is a potential for these to interact with the Scheme, including those beyond the Scheme's Order Limits.

23.4.8 The UK Government's National Risk Register 2020 (Ref 23.11) was used to identify possible major accidents or disasters that could be relevant to the Scheme. Those with little relevance in the UK including natural and environmental hazards such as wildfire, volcanic eruption and earthquakes have been excluded from the assessment, further to this consideration of risk events such as pandemic, malicious attacks and public disorder have been excluded.

23.4.9 Consideration was placed upon the location of the Scheme to screen major accidents and disasters. Based then on the likelihood of such an event occurring in relation to the Scheme, a shortlist was created for the assessment, taking account of the broader topic areas scoped into the assessment. The major accidents and disasters taken forward for further consideration are shortlisted below.

- Flooding;
- Fires and explosion;
- Road accidents;
- Aviation Incidents;
- Damage or cut-off of utilities;
- Unstable ground conditions; and
- Vegetation pests and diseases.

23.4.10 A tabulated shortlist of the potential impacts of the Scheme scoped into assessment have been outlined below in **Table 23.3**.

**Receptors**

23.4.11 The following receptors have been considered within this assessment:

- The local population and human health specifically members of the public, local communities, road users and nearby workers;
- Nearby infrastructure and built environment including residential properties, local commercial buildings, airfields;
- Underground utilities;
- The natural environment including habitats, land and soil, ground and surface water, air and climate; and
- Historic environment.

23.4.12 It is acknowledged that throughout the construction, operation including maintenance activities and decommissioning phases of the Scheme there are

potential effects of the Scheme on workers and employees involved with the Scheme. However, it is considered that these effects will be managed sufficiently through implementation and compliance with the relevant health and safety regulations and ensuring works are carried out in line with best practice measures. Compliance with these measures will mitigate potential risks to be As Low As Reasonably Practicable (ALARP). Where necessary, employees of the Scheme have been considered. Adherence to standard health and safety legislation is considered sufficient to minimise any risk to these receptors from major accidents or disasters to a reasonable level, e.g. Health and Safety at Work etc. Act 1974 and the Construction (Design and Management) ('CDM') Regulations 2015.

23.4.13 Members of the public who wilfully trespass, breaching the Scheme's Order Limits perimeter fencing will not be considered within this assessment. The Applicant will provide secure perimeter fencing of the substations and BESS areas with metal palisade fencing and CCTV will be in operation across the Scheme to reduce the risk of trespassing to ALARP.

**Table 23.3: Major Accidents or Disasters Shortlisted for Further Consideration**

| Effect | Description of Potential Impact | Sensitive Receptor | Scheme Phase | Reasonable worst consequence if event did occur |
|---|---|---|---|---|
| Flood Risk | Increased risk of onsite surface water flooding due to increased precipitation due to climate change | Local population<br>Built environment<br>Natural environment | Construction, Operation and Decommissioning | Risk of damage to sections of the Scheme, particularly the Cable Route during construction. Risk of damage to or loss of construction materials and plant. Potential harm to construction workers.<br>Risk of potential damage to Scheme infrastructure during operation.<br>Risk of harm to property and people if the Scheme exacerbated flood risk within the local community.<br>Risk of harm to natural environment including surface water and loss of habitats.<br>Flood risk is further discussed in Chapter 10: Hydrology, Flood Risk and Drainage [**EN010170/APP/GH6.2.10**].<br>The review of climate change resilience set out in Chapter 7: Climate Change [**EN010170/APP/GH6.2.7**]. |
| | Increased risk of offsite surface water flooding due to increased precipitation due to climate change | Local population<br>Built environment<br>Natural environment | Construction, Operation and Decommissioning | Risk of harm to property and people if the Scheme exacerbated flood risk within the local community.<br>Risk of harm to natural environment including surface water and loss of habitats.<br>Flood risk is further discussed in Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]**. |

| | | | | |
|---|---|---|---|---|
| | | | | The review of climate change resilience set out in Chapter 7: Climate Change **[EN010170/APP/GH6.2.7]**. |
| | Increased offsite flooding due to increased water discharge to local watercourses | Local population<br>Built environment<br>Natural environment | Construction, Operation and Decommissioning | Risk of harm to property and people if the Scheme exacerbated flood risk.<br>Risk of harm to the natural environment including waterbodies and loss of habitats.<br>Flood risk is further discussed in Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]**. |
| Fires and explosions | Risk of battery fires. | Local population<br>Natural environment | Construction, Operation and Decommissioning | Risk of harm/injury/death to construction workers or member of the public.<br>Risk of harm/contamination to natural environment.<br>Risk of air quality impacts from emission of smoke and particulate matter from major onsite fires.<br>Chapter 16: Air Quality, outlines potential likely effects associated with emissions from fires **[EN010170/APP/GH6.2.16]**. |
| | Disturbance of unexploded ordnance (UXO) | Local population<br>Built environment<br>Natural environment | Construction | There is an increased risk of construction workers encountering unexploded ordnance during intrusive investigation work.<br>Risk of fire /explosion causes damage to environmental receptor or structural damage to buildings and / or infrastructure.<br>Risk of harm/injury/death to construction workers or member of the public. |

| | | | | |
|---|---|---|---|---|
| | | | | Chapter 22: Ground Conditions and Contamination [**EN010170/APP/GH6.2.22]** considers potential impacts associated with UXO risk. |
| | Explosions from impacts on major accident hazard site (Sywell) and three pipelines. | Local Population<br>Built environment<br>Underground utilities | Construction | Risk of fire /explosion and damage to environmental receptor or structural damage to buildings and / or infrastructure.<br>Risk of harm/injury/death to construction workers or member of the public.<br>Chapter 24: Other Environmental Matters [**EN010170/APP/GH6.2.24]** considers utilities. |
| Damage/ cut-off of utilities | Striking of underground services/utilities. | Local Population<br>Underground utilities | Construction | Risk of harm/injury/death to construction workers or member of the public.<br>Chapter 24: Other Environmental Matters [**EN010170/APP/GH6.2.24]** considers utilities. |
| Unstable ground conditions | Ground compressibility. | Local Population<br>Built environment | Construction | Risk of harm to built environment, alluvium and made ground deposits are considered to be too variable and compressible in their existing condition for conventional shallow foundations at the Site.<br>Chapter 22: Ground Conditions and Contamination [**EN010170/APP/GH6.2.22]** considers potential impacts associated with UXO risk. |
| Road Accidents | Increased risk of accidents from increased HGV use of local highways | Local Population: Road users | Construction | Risk of harm/injury/death to construction workers or member of the public.<br>The assessment of road user and pedestrian safety is presented in Chapter 13: Transport and Access [**EN010170/APP/GH6.2.13]**. |

| | | | | |
|---|---|---|---|---|
| | Glint and glare to vehicle drivers on national and regional roads | Local Population: Road users | Operation | Risk of harm/injury/death to construction workers or member of the public.<br>The assessment of glint and glare and road user safety is presented in Chapter 15: Glint and Glare [**EN010170/APP/GH6.2.15]**. |
| Vegetation Pests and Diseases | Habitats and Protected Species | Natural environment | Construction and Operation | Harm to existing and proposed planting.<br>The assessment of invasive and non-native species is outlined in Chapter 9: Ecology and Biodiversity [**EN010170/APP/GH6.2.9]**. |
| Aviation Incidents | Glint and glare to pilots | Pilots<br>Local population<br>Built environment | Operation | Risk of harm/injury/death to construction workers, pilots or member of the public.<br>Risk of damage to built environment and/or Scheme infrastructure.<br>Impacts related to glint and glare on aviation safety are presented in ES Chapter 15: Glint and Glare [**EN010170/APP/GH6.2.15**]. |

## Impact Assessment Methodology

23.4.14 The following methodology is based on the 2020 guidance published by the IEMA (Ref 23.9), with references to previous assessments conducted for similar schemes.

23.4.15 The purpose of this assessment is to assess the vulnerability of the Scheme to those hazards that have the potential to cause a major event, and which could then generate a significant adverse effect on the environment. This will comprise a risk assessment specific to the Site, focusing on un-planned, yet plausible events caused by both natural (for example a flood) and man-made events (for example arson) which could arise.

23.4.16 The following three categories have been determined based on practices completed by similar schemes:

- 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.

23.4.17 The approach to assessing the potential impacts of the Scheme on Major Accidents and Disasters will follow the IEMA Guidance (Ref 23.9) on assessing EIAs.

23.4.18 This assessment of major accidents and disasters has been conducted using a staged approach as outlined here:

- Identifying potential risk events related to the scoped in major event types (source / pathways and receptors);
- Defining the reasonable worst-case consequence if the risk event did occur;
- Identifying any possible prevention, minimisation and / or mitigation measures for the risk event;
- Assessing the likelihood of a risk event occurring; and then
- Determining whether the risk has been mitigated to ALARP and identification of any residual risks and their significance.

23.4.19 Significance will be considered for each identified receptor in conjunction with the appropriate environmental topics for this assessment.

### Sensitivity of Receptors

23.4.20 The Scheme is likely to have impacts on major accident and disaster receptors in the local District and County areas. The sensitivity of a receptor is based upon its relative importance, and of its ability to adapt to or absorb changes as a result of changes to baseline conditions. The Sensitivity of these receptors will be assessed in accordance with **Table 23.4** below.

**Table 23.4: Criteria for Assessing Sensitivity Receptors**

| Sensitivity | Definition |
|---|---|
| High | The receptor or resource has little ability to absorb the change without fundamentally altering its present character or it is of international or national importance |
| Medium | The receptor or resource has moderate capacity to absorb the change without significantly altering its present character or is of high and more than local (but not national or international) importance. |
| Low | The receptor or resource is tolerant of change without detrimental effect, is of low or local importance. |

## Magnitude of Impacts

23.4.21 The magnitude of an impact is typically defined by the following factors:

- Extent – the area over which an effect occurs;
- Duration – the time for which the effect occurs;
- Frequency – how often the effect occurs; and
- Severity – the degree of change relative to existing environmental conditions.

23.4.22 The magnitude of impacts will be quantified in full for the construction and operational phases of the Scheme and estimated for the Scheme's decommissioning (the operational life of the Scheme is anticipated to be 60 years) in accordance with the metrics set out in **Table 23.4**.

**Table 23.5: Criteria for Assessing Magnitude of Impacts (Positive or Negative)**

| Magnitude | Definition |
|---|---|
| Major | The total loss or major change/substantial alteration to key elements/features of the baseline (pre-development) conditions, such that the post development character/composition/attributes will be fundamentally changed.<br><br>High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes; majority of population affected; permanent change; substantial service quality implications. |
| Moderate | Loss or alteration to one or more key elements/features of the baseline conditions, such that post development character/composition/attributes of the baseline will be materially changed<br><br>Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in |

| Magnitude | Definition |
|---|---|
| | morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications. |
| Minor | A minor shift away from baseline condition. As change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation.<br>Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications. |
| Negligible | Very little change from baseline conditions. The change will be barely distinguishable and approximating to a non-change situation<br>Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication. |

## Assessment of Significance

23.4.23 The degree of significance of impacts, in respect of major accidents and disasters, is determined using the matrix below in **Table 23.6** taking into consideration both receptor sensitivity to change and magnitude of change to baseline conditions

**Table 23.6: Criteria for Assessing the Significance of Effects**

| Sensitivity<br>Magnitude | High | Medium | Low |
|---|---|---|---|
| **Major** | Major | Major/moderate | Moderate/minor |
| **Moderate** | Major/moderate | Moderate | Minor |
| **Minor** | Moderate/minor | Minor | Minor |
| **Negligible** | Minor/negligible | Minor/negligible | Negligible |

23.4.24 The degree of significance can be described either in terms of beneficial or adverse magnitudes of scale and should be used to determine which impacts from the Scheme need to be considered further in the ES, and therefore which effects require mitigation measures to be implemented in the design, construction, operation, and decommissioning phase of the Scheme.

23.4.25 According to IEMA guidance (Ref 23.9), a significant effect is defined as one that could include the loss of life, has the potential to cause temporary or permanent destruction of an environmental receptor, which cannot be remedied through minor clean-up and restoration efforts. Additionally, a significant effect would result in long-lasting damage with a reasonable likelihood of occurring.

## 23.5 Assessment Assumptions and Limitations

23.5.1 The methodology for major accidents and disasters has considered the following assumptions:

- The potential impacts and their effects cannot be predicted with complete certainty. Predictions are constrained by the quality and reliability of available information and the precision of the predictive methods used. Therefore, the assessment in the ES will indicate likely impacts rather than exact predictions. Where there is uncertainty, a precautionary approach will be taken, assuming a reasonable worst-case scenario for the assessment.
- The design of the Scheme will adhere to various industry standards and codes, many of which are mandatory. These standards require that infrastructure and systems be designed to either eliminate risks to people and the environment or reduce them to levels that are ALARP, which is considered adequate.

## 23.6 Baseline Conditions

23.6.1 This section describes the baseline environmental characteristics for the Scheme and surrounding areas with specific reference to major accidents and disasters. Where relevant, consideration of baseline conditions from other technical chapters has been relied upon and referred to where it has informed conclusions on baseline conditions for MAD.

### Existing Baseline

#### Flooding

23.6.2 Appendix 5.1: Site Selection Assessment **[EN010170/APP/GH6.3.5.1]** outlines the step-by-step process for selecting the Sites which form the Order Limits for the Scheme. The evaluation process of potential development areas includes consideration to several environmental considerations including flood risk and the connection feasibility the areas to the Grendon Substation Point of Connection. Where possible the Applicant has looked to minimise the locality of the Scheme within high risk flood zone areas, however where there is higher risk of flooding the Applicant has looked to design the Scheme and apply mitigation to minimise risk.

23.6.3 The Environment Agency's Flood Map for Planning shows Sites Green Hill A, A.2, Green Hill B, and Green Hill C are entirely within Flood Zone 1, having a very low risk of flooding. The majority of Sites Green Hill D, Green Hill E, Green Hill F and Green Hill G are also in Flood Zone 1, whilst parts of these Sites and at least part of all fields within Green Hill BESS are within Flood Zone 3.

23.6.4 The surface water flood risk for all sites ranges from very low (less than 0.1% annual probability) to high (greater than 3.3% annual probability), with the areas of high risk associated with and largely matching the courses of land drainage ditches and water courses. Overall, the risk of surface water flooding at the Sites is considered low for all sites.

23.6.5 Where a higher risk has been identified, such as at Green Hill BESS, flood modelling has confirmed that the areas identified for development are either

located outside of the floodplain or are predicted to experience shallow flood depths of less than 0.3 metres.

23.6.6 The Northamptonshire Community Risk Register (REF) determines flooding as very high risk, considering the "*vast array of watercourse"*" in Northamptonshire, noting that "*Flooding at itsmost serious can affect many different aspects of our daily lives*".

23.6.7 Further detailed baseline information with regard to flood risk both to onsite and offsite receptors has been considered in Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]**. Furthermore, baseline data related to the potential impacts of increased surface water flooding as a result of increased precipitation due to climate change have been explored in Chapter 7: Climate Change **[EN010170/APP/ GH6.2.7]**.

23.6.8 Together, these conclude that onsite and offsite receptors are of a medium sensitivity to impacts from the Scheme.

**Fire and Explosions**

23.6.9 The surrounding area is predominantly rural with small settlements and villages across the length of the Scheme. The existing Grendon Substation, located adjacent to Green Hill BESS, is a potential source of fire and explosions within the Study Area.

23.6.10 Impacts from fires and explosions related to the Scheme will impact on air quality and human health receptors. Baseline conditions for air quality have been explored in Chapter 16: Air Quality **[EN010170/APP/GH6.2.16]**, which indicate receptors are of a high sensitivity to air quality changes.

*Unexploded Ordnance*

23.6.11 Green Hill G has been identified as a former WWII USAAF practice bombing range (Lavendon) and an explosives demolition ground, operational from 1944. Aerial imagery identified crater features from controlled explosions, likely leaving behind significant quantities of inert scrap metal, though partially destroyed UXO may still pose a residual risk.

23.6.12 A 1957 aircraft crash in the far east of the site scattered wreckage across the south east but is not considered a UXO source.

23.6.13 Risk zones have been classified as high-risk in the central area, moderate-risk in the central north, west, and south, and low-risk along the northern and western boundaries of Green Hill G [**EN010170/APP/GH6.3.22.3**]. It is considered that receptors are of medium sensitivity.

**Road Accidents**

23.6.14 A baseline assessment of road use, and accidents and safety is presented in ES Chapter 13: Transport and Access **[EN010170/APP/GH6.2.13].** The A45 and A14 are both part of the strategic road network and are both dual carriageways. The A43, A428 and A509 are part of the major road network and are A roads designed to accommodate high traffic flows and heavy goods vehicles (HGVs). The A43, A428 and A509 are predominantly single carriageway roads.

23.6.15 ES Chapter 13: Transport and Access **[EN010170/APP/GH6.2.13]** determines that most of the road network to be utilised for construction traffic is of a medium or low sensitivity to impacts that may cause increased risk of accidents to non-vehicular traffic or as a result of the transportation of hazardous material. A number of smaller roads closer to the Scheme have been identified as being of medium sensitivity.

23.6.16 Impacts related to glint and glare on highway safety are presented in ES Chapter 15: Glint and Glare **[EN010170/APP/GH6.2.15]**, which demonstrate road users are of a medium sensitivity to glint and glare impacts.

**Aviation Incidents**

23.6.17 Aviation receptors have been considered as part of Chapter 15: Glint and Glare **[EN010170/APP/GH6.2.15]**. The following receptors have been considered: Easton Maudit Airstrip, Hold Farm Airstrip, Pitsford Airstrip, Tower Farm Airstrip, William Pitt Airstrip and Sywell Aerodrome with airfields of medium sensitivity to glint and glare impacts with a medium sensitivity to impacts.

**Damage or Severance of Utilities**

23.6.18 Telecommunications, utilities and television receptors have been considered in Chapter 24: Other Environmental Matters **[EN010170/APP/GH6.2.24]**, the Crossing Schedule **[EN010170/APP/GH7.18]** identifies numerous telecommunication and utility services that need to be crossed by the Cable Route Corridor. Each crossing includes the intended crossing technique options.

**Unstable Ground Conditions**

23.6.19 Alluvium deposits have been identified within Green Hill A, F, BESS, Cable Route Corridor, and possibly encroaching into Green Hill E and G. Limited potential areas of Made Ground have also been identified within Green Hill A, E, F and G, associated with former developed areas or agricultural tracks. Alluvial deposits and Made Ground have potentially low bearing capacity and unacceptable levels of total/differential settlement, which can impact the built structures on the Sites.

**Vegetation, Pests, and Diseases**

23.6.20 Since 2000, records show the presence of Virginia-creeper, Japanese knotweed, orange balsam, and Nuttall's waterweed in the Study Area. The existing baseline conditions within the Study Area with regard to susceptibility to impacts as a result of disease and pests are explored in Chapter 9: Ecology and Biodiversity **[EN010170/APP/GH6.2.9]** in the ES.

**Human Health, Safety and Wellbeing**

23.6.21 Across North Northamptonshire, West Northamptonshire, Milton Keynes and Bedford Borough Council there is a combined population of 1,257,500 in 2021. The Scheme is located within 1km of the following villages: Walgrave, Old, Holcot, Mears Ashby, Earls Barton, Easton Maudit, Bozeat, Lavendon and Grendon. Several residential properties are located within 500m of the Order Limits.

23.6.22 Baseline conditions relating to human health and wellbeing have been explored in Chapter 17: Socio-economics, Tourism and Recreation **[EN010170/APP/GH6.2.17]** wherein a desk-based review of key health receptors has been undertaken.

23.6.23 In considering the surrounding population to the Scheme, the overall level of sensitivity of the population human health, safety and wellbeing impacts is medium. Naturally there are groups of higher risk to impacts within the population that are specifically identified where appropriate in this assessment.

### Future Baseline

23.6.24 This section considers changes to the baseline conditions, described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would be in place. The future baseline scenarios are set out in Chapter 2: EIA Process and Methodology **[EN010170/APP/GH6.2.2]**.

23.6.25 In the absence of the Scheme, the baseline details as presented above are not anticipated to change in the absence of the Scheme.

## 23.7 Embedded Mitigation Measures

23.7.1 The way that potential environmental impacts have been or will be prevented, avoided or mitigated to reduce impacts to a minimum through design and/or management of the Scheme is outlined in this section and will be considered as part of the assessment of the potential effects.

23.7.2 The following embedded mitigation measures for construction, operation and decommissioning have been incorporated into the Scheme design, with detailed proposals and locations submitted with the DCO application.

23.7.3 The Applicant has committed to constructing and managing the Scheme in accordance with best practice , health and safety standards and systems.

23.7.4 The Applicant has committed to completing the following management plans which will support the DCO application and outline clear and consistent approaches to control activities within the Schemes Order Limits:

- Outline Battery Fire Safety Management Plan [**EN010170/APP/GH7.7**];
- Outline Construction Environmental Management Plan (OCEMP) [**EN010170/APP/GH7.1**];
- Outline Operational Environmental Management Plan (OOEMP) [**EN010170/APP/GH7.2**];
- Outline Decommissioning Statement (ODS) [**EN010170/APP/GH7.3**]; and
- Outline Construction Traffic Management Plan (OCTMP) [**EN010170/APP/GH7.9**].

## 23.8 Assessment of Impacts and Effects

### Flood Risk

**Increased risk of onsite surface water flooding due to increased precipitation due to climate change**

23.8.1 The vulnerability of the Scheme to flooding has been mitigated through embedded design measures to avoid building Critical infrastructure (conversion units, substations and BESS) in areas where there is a more than 1 in 1,000 annual probability of flood risk.

23.8.2 Where works are able to be built compatibly with potential flooding of up to a depth of 1m, PV arrays and cabling, the vulnerability of construction workers and equipment is mitigated through embedded measures secured through the Outline Construction Environmental Management Plan [**EN010170/APP/GH7.1**]. These include the requirement for contractors to produce a Flood Risk Management Action Plan/Method Statement which will provide details of the response to an impending flood and include the following:

- 24-hour availability and ability to mobilise staff in the event of a flood warning;
- The removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period;
- Details of the evacuation and site closedown procedures;
- Arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters, from the temporary works areas; and
- The Contractor will sign up to the Floodline service and describe in the Emergency Response Plan the actions it will take in the event of a flood event occurring. These actions will be hierarchal meaning that as the risk increases the Contractor will implement more stringent protection measures.

23.8.3 The Outline Construction Environment Management Plan (OCEMP) [**EN010170/APP/GH7.1**] accompanying the DCO application, will describe water management measures to control surface water run-off and drain hard standing and other structures during the construction, operation, and decommissioning of the Scheme. This will form part of a Pollution Prevention Plan (PPP) to be implemented for the Scheme

23.8.4 The measures outlined within section 23.7 and further discussed in Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]** are to be secured through Requirement in the DCO. As such, the impacts from flooding on infrastructure and on human health of workers is anticipated to be minor adverse, not significant.

**Increased offsite flooding due to increased water discharge to local watercourses**

23.8.5 Temporary increase in impermeable area during construction / decommissioning has the potential to increase flooding both on and offsite. Temporary hardstanding or compacted areas could result in rapid surface water runoff to local watercourses or cause an increase in overland flow.

23.8.6 The substations and BESS areas will generate increased surface water runoff when compared to the current undeveloped nature of the Site. In order to

maintain the predevelopment surface water regime post development mitigation measures will include utilising permeable surfacing for site access and the installation of linear infiltration trenches around Critical infrastructure. Between solar panels suitable planting (such as wildflower or grass mix) will be implemented to limit any potential concentrated rainfall run off.

23.8.7 Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]** identifies impacts during construction and decommissioning from mud and debris blockages to the drainage network, temporary increases in impermeable areas, and compaction of soils. These impacts are likely to affect onsite workers, onsite machinery, and to downstream offsite residential receptors, properties, waterbodies and habitats. Mitigation measures including retention of vegetated groundcover, use of existing access routes, and appropriate site layout to avoid excessive disturbance near ditches, reduce the magnitude of effect. The residual effects from these construction and decommissioning impacts assuming all mitigation measures are implemented have been assessed as having a moderate adverse effect which is therefore significant.

23.8.8 During operation, the increase in permanent impermeable area on the Site is considered negligible in comparison to the total area covered by the Scheme. The panelled areas are designed to remain permeable, with grassland beneath and between the panels maintained to encourage infiltration and minimise runoff. However, infrastructure such as the substations and energy storage compounds will introduce impermeable surfacing, which may generate increased surface water runoff relative to the existing greenfield conditions, following the implementation of mitigation measures the impact towards receptors is minor adverse.

**Increased risk of offsite surface water flooding due to increased precipitation due to climate change**

23.8.9 Chapter 7: Climate Change **[EN010170/APP/GH6.2.7]** identifies that the impacts of increased rainfall events, winter precipitation, and increased probability of extreme weather events on the Scheme's construction is of very low likelihood, given the timescale of construction, it is not anticipated these events will be significantly more likely than the baseline, and as such, the anticipated impacts are not severe and are not significant. The OCEMP [**EN010170/APP/GH7.1]** includes measures for contractors to monitor weather forecasts and receive Environment Agency flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms, flooding.

23.8.10 These impacts are likely to be of a greater significance during operation and decommissioning as a result of future baseline conditions. However, embedded mitigation measures, as set out in Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]** will reduce runoff generation from the Scheme and help maintain the existing surface water regime That notwithstanding, the level of effect to the Scheme is identified minor adverse effect which is therefore not significant.

23.8.11 Impacts that the Scheme may have on onsite or offsite receptors as a result of increased flooding from construction activities have been assessed in ES Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]**.

## Fires and explosion

### Risk of Battery Fires.

23.8.12 Health and safety on site would be managed by a third party contractor appointed by the Applicant during construction and decommissioning to mitigate the risk of fire in line with legislative safety requirements. An Outline Battery Storage Safety Management Plan (OBSSMP) **[EN010170/APP/GH7.7]** has been prepared and is provided with the Application, and is to be secured by Requirement in the DCO.

23.8.13 The OBSSMP details existing safety systems, along with risk reduction measures which are likely to be incorporated into the system to be installed at the Sites. The BESS will be monitored by the on Site control facilities as well as 24/7 monitoring by a remote-control facility provided by the BESS manufacturer or operator.

23.8.14 The detailed BSSMP, will take into account the latest good practices for battery system failure prevention and detection, consequence modelling, risk analysis, and emergency response planning, as guidance continues to develop in the UK and around the world. The BESS will be designed in accordance with the UK and internationally recognised good practice guidance available at the time.

23.8.15 Consultation with Northamptonshire Fire and Rescue Service and relevant legislation has influenced the overall Scheme design to ensure adequate siting of BESS and provision of access for emergency services. The Scheme will have a robust and validated emergency plan, developed in consultation with Northamptonshire Fire and Rescue Service.

23.8.16 The risk of fire from the BESS creates an increased risk of impacts to human health for onsite employees, ecology, hydrology and hydrogeology during operation, and to a lesser extent during construction and decommissioning.

*Construction and Decommissioning Phase*

23.8.17 The risk of fire from the BESS during construction and decommissioning is negligible due to the containerised construction of the units, thus reducing the risk of damage to battery cells which may cause fires. Furthermore, risks associated with damage to battery cells is likely to be isolated to individual battery cells and so risk of larger fires is reduced. As such, the assessed level of effect of a BESS fire during construction or decommissioning on construction workers and the local population is moderate-minor adverse and therefore not significant.

*Operational Phase*

23.8.18 During operation, the risk of battery fires is greater as a result of the electrical loading on the battery cells. Employees working with the units will be properly trained to handle, install, and operate battery energy storage system components, and be competent at monitoring, responding to and operating fire detection and suppression systems. As such, it can be assessed that onsite employees are of a medium sensitivity to impacts of fires. Similarly, trained firefighters, where required to respond to battery fires, are also of a medium sensitivity.

23.8.19 With the implementation of embedded mitigation outlined within the OBSSMP fires should be manageable. As such, the estimated level of effect on site safety

(including human health of onsite employees and firefighters) during the operational lifetime of the Scheme as a result of battery fires is moderate-minor adverse and therefore not significant.

23.8.20 Chapter 16: Air Quality **[EN010170/APP/GH6.2.16]** includes an assessment of BESS fire emissions considering the effects from BESS fires on nearby sensitive receptors including residential, and PRoW receptors surrounding Green Hill C and Green Hill BESS. The assessment indicates that the bridleway Mears Ashby TN7 would be the most affected receptor, although the likelihood of such an event, including the presence of an easterly wind, is very low. As a result, the greatest level of effect to human health is anticipated to be a short-term minor adverse effect (not significant), subject to implementation of good practice safety measures, such as notifying potentially affected residents including advice on the health effects of smoke and ways to reduce exposure (e.g. close windows and stay indoors), cancellation of outdoor events and Should there be a BESS fire in close proximity to the road the site operator should determine wind direction and seek to close the road if deemed necessary.

23.8.21 Chapter 22: Ground Conditions and Contamination **[EN010170/APP/GH6.2.22]** considers contamination of controlled waters and ecological sensitive receptors, specifically the Grendon Lakes (Gravel Pits SSSI / SPA), throughout the lifetime of the Scheme via incidents related to BESS fires. However, with the implementation of the mitigation measures to be contained in the CEMP, OEMP and DEMP, including the fully housed contained systems to prevent hazardous substances or contaminated fire water from leaching into the environment. Fire suppression using environmentally safer foams or fire waters. In case of fire, hazardous materials will be managed through containment and cleanup protocols, supported by an emergency response plan outlining fire control and environmental protection measures the residual effect is considered to be minor adverse.

23.8.22 Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]** considers diffuse pollution resulting from fire, in the event of a fire a system of automatically self- actuating valves at the outfalls from the battery storage areas will be closed, isolating the battery storage areas drainage from the wider environment. The water contained by the valves will be tested and either treated and released or tankered offsite as necessary and in consultation with the relevant consultees at the time. Local fire water provision will be provided within the Green Hill BESS and Green Hill C sites. Following the implementation of mitigation measures the residual effect is considered to be Negligible.

23.8.23 At Green Hill BESS, there is a potential risk of a battery fire and subsequent discharge of chemicals into the adjacent stream, which feeds into the River Nene. As a result of embedded mitigation measures, such as fire suppression systems, with containment measures in place to manage runoff in the event of a fire no significant effects on ditches and watercourses are anticipated as outlined in Chapter 9: Ecology and Biodiversity **[EN010170/APP/GH6.2.9]**.

**Disturbance of unexploded ordnance (UXO)**

23.8.24 A potential for unexploded ordnance (UXO) has been identified within Green Hill G as this site was formerly part of Lavendon Practice Bombing Range and was

an explosives demolition ground during World War II. As such, there is an increased risk of construction and decommissioning workers encountering unexploded ordnance within this area during the construction phase.

23.8.25 Mitigation measures are outlined in Chapter 22: Ground Conditions and Contamination **[EN010170/APP/GH6.2.22]**, which includes a site clearance, the use of concrete feet and establishment of a UXO Risk Management Plan. Subject to implementation of mitigation measures, the likely effects from unexploded ordinance on the local population and natural environment are minor adverse and is therefore not significant.

23.8.26 During operation no intrusive works are proposed and so the risk of encountering UXO is lower as no intrusive works are anticipated and so the likely environmental effect negligible.

**Explosions from impacts on major accident hazard site (Sywell) and three pipelines.**

23.8.27 The design of the Scheme layout has utilised topographical and geophysical survey data, alongside mapping provided by providers to ensure utilities are adequately offset from the Scheme. When crossing existing buried utilities or apparatus, the maximum depth of the dug cable trench is 2m below the level of the existing apparatus. Consultation and agreement of construction/demobilisation methods will be undertaken prior to works commencing (this would be covered by the protective provisions included in the DCO).This will ensure safe working procedures can be maintained for employees, access can be provided for utility maintenance, and construction impacts can be mitigated against.

23.8.28 As a result, the Scheme is not expected to have any adverse impacts on major accident hazard site (Sywell) and three pipelines and so the likely environmental effect is minor adverse, not significant.

## Road accidents

**Increased risk of accidents from increased HGV use of local highways**

23.8.29 The assessment of road accidents and safety presented in ES Chapter 13: Transport and Access **[EN010170/APP/GH6.2.13]**.

23.8.30 Chapter 13: Transport and Access **[EN010170/APP/GH6.2.13]** confirms that there will be a relatively flat profile of deliveries across the construction period for the Scheme and each individual Site. Notwithstanding this, a peak HGV activity has been identified through the indicative programme with the delivery of HGV modules. HGV movements will be strictly managed to ensure that vehicle movement is controlled and kept to a minimum. Chapter 13: Transport and Access **[EN010170/APP/GH6.2.13]** states that '*the initial sifting exercise results in no links during the construction phase exceeding the thresholds in Rules 1 and 2. Therefore, the construction phase would not have a significant adverse effect on any of part of the Study Area'*.

23.8.31 Some deliveries during the construction phase will be regarded as 'large loads'. There will be some abnormal loads to transport the transformers to the substations. These movements will be managed so that the potential effects are

mitigated appropriately and an abnormal loads assessment has been undertaken and forms part of the Transport Assessment. The abnormal loads will be managed through the OCTMP [**EN010170/APP/GH7.9**]. It is anticipated that the likely effect of large loads will be minor adverse and temporary in nature, and not significant.

23.8.32 The traffic associated with the operational and maintenance phase is considered to be lower than that associated with the construction and decommissioning phase. The effects of the Scheme during operation will therefore be lower or no worse than the construction phase.

23.8.33 The potential environmental effects of spillage of pollutants or release of hazardous materials from highway incidents during construction or decommissioning is considered in ES Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10].** Therein, it is determined that the residual effects subject to appropriate mitigation outlined within the OCTMP [**EN010170/APP/GH7.9]** is no greater than minor adverse. This is therefore not significant.

**Glint and glare to vehicle drivers on national and regional roads**

23.8.34 Impacts related to glint and glare on highway safety during the operational lifetime of the Scheme are presented in ES Chapter 15: Glint and Glare **[EN010170/APP/GH6.2.15]** which demonstrates Glint and glare was predicted towards modelled road receptors within 1km of the Sites. Upon a review of mitigating factors and embedded mitigation, a low impact has been predicted. Embedded mitigation in the form of vegetation as instant screening will be implemented to obstruct line of sight between the road users and reflecting arrays.

23.8.35 As such, the effect from glint and glare is predicted towards road receptors nearby to the Scheme is minor adverse, not significant.

**Aviation Incidents**

**Glint and glare to pilots**

23.8.36 Impacts related to glint and glare on aviation safety during the operational lifetime of the Scheme are presented in ES Chapter 15: Glint and Glare **[EN010170/APP/GH6.2.15]** which demonstrates Glint and glare was predicted towards modelled aviation receptors within 5km of the Sites. Assessment on aerodromes outside of a 5km screening distance is uncommon as significant impacts are not likely due to increased horizontal and vertical distance between solar panels and aviation receptors.

23.8.37 The assessment of effects set out in ES Chapter 15: Glint and Glare **[EN010170/APP/GH6.2.15]** states that no significant effects are predicted in respect of aviation receptors during the operational lifetime of the Scheme which is supported by the Empirical Evidence on Glint and Glare from Solar PV Installations Near UK Aerodromes [EN010170/APP/GH7.28] . As such, there are no significant effects relating to major accidents and disasters with regard to aviation incidents.

**Damage or cut-off of utilities**

**Striking of underground services/utilities**

23.8.38 Underground utility services have been identified across the Scheme through mapping and surveys. The design of the Scheme layout has utilised topographical and geophysical survey data, alongside mapping provided by telecommunication and utilities providers to ensure underground utilities are adequately offset from the Scheme. The Crossing Schedule **[EN010170/APP/GH7.18]** identifies numerous telecommunication and utility services that need to be crossed by the Cable Route Corridor. Each crossing includes the intended crossing technique options. Any interaction with existing apparatus above or below ground should be conducted in accordance with the required safety measures as directed by the apparatus owner or operator. These measures will help manage the risk of damage to telecommunications and utilities.

23.8.39 Where proposed cable routes cross telecommunication and utilities, the cables will be laid so that the utilities are crossed at 90° where possible and will be suitably offset where running parallel, to minimise impacts. When crossing existing buried utilities or apparatus, the maximum depth of the dug cable trench is 2m below the level of the existing apparatus. Consultation and agreement of construction/demobilisation methods will be undertaken prior to works commencing (this would be covered by the protective provisions included in the DCO). This will ensure safe working procedures can be maintained, access can be provided for utility maintenance, and construction impacts can be mitigated against. As a result, the Scheme is not expected to have any adverse impacts on telecommunication, television, or utilities and so the effect is negligible.

Mitigation measures to ensure minimisation of damage or severance of utility services has been included in Chapter 24: Other Environmental Matters **[EN010170/APP/GH6.2.24]** and Outline Construction Environmental Management Plan **[EN010170/APP/GH7.1]** to maintain high standards of work safety and competence.

**Unstable ground conditions**

**Ground compressibility**

23.8.40 Alluvium deposits have been found in Green Hill A, F, BESS, Cable Route Corridor, also areas of Made Ground are also present in Green Hill A, E, F, and G, linked to former developed areas or agricultural tracks. These deposits have low bearing capacity and can cause unacceptable levels of settlement, affecting structures on the Sites. However, the embedded mitigation measures in the OCEMP, such as transferring floor loads to improved soils or piles through concrete ground beams or frames, as detailed in Chapter 22: Ground Conditions and Contamination **[EN010170/APP/GH6.2.22]** reduce the impact of unstable ground conditions. The risk to the built environment will be reduced and the impact is considered minor adverse, not significant.

**Vegetation pests and diseases**

**Habitats and Protected Species**

23.8.41 As identified in ES Chapter 9: Ecology and Biodiversity [**EN010170/APP/GH6.2.9**] the greatest level of impact is anticipated from the potential spread of invasive species during construction, operation and decommissioning. Although not identified within the Scheme, precautionary measures to avoid the accidental spread of invasive species have been set out in the Landscape and Ecological Mitigation Plan [**EN010170/APP/GH7.5**]. As a result of the mitigation measures therein, the residual effect of the spread of invasive species is **negligible** and is therefore not significant.

## 23.9 Additional Mitigation Measures

23.9.1 Minimising the risk of major accidents during construction, operation, and decommissioning will be addressed through the implementation of embedded mitigation measures and appropriate risk assessments as required in the following documents, which will be secured via a requirement to the DCO.

23.9.2 Additionally, as outlined within Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP/GH6.2.10]** where deemed necessary (in areas where structures such as BESS or substations are proposed), a temporary drainage network will be installed prior to the commencement of construction and a robust maintenance plan, confirmed through the OCEMP [**EN010170/APP/GH7.1**], which should be maintained throughout the duration of construction works on the Site. This is a precautionary and safeguarding approach to reduce the risk to the workers and help reduce the likelihood of the above significant effects. Similarly, during decommissioning a Decommissioning Statement should be maintained.

23.9.3 Chapter 27: Commitments Register **[EN010170/APP/GH6.2.27]** outlines all mitigation measures which the Applicant is committed to in the ES, including both embedded mitigation measures (i.e., those which are inherently part of the design or form part of the application) and additional mitigation. The Mitigation Schedule includes cross references to the draft DCO, identifying where the mitigation measure is secured by Requirement.

## 23.10 Residual Effects

23.10.1 Taking into account the mitigation measures as detailed above, the potential for the Scheme to generate effects was assessed using the methodology as detailed in Section 23.4 of this Chapter. As outlined in above, major accidents and disaster effects from flood risk, fires and explosions, damage/ cut-off of utilities, unstable ground conditions, road accidents, vegetation Pests and diseases and Aviation incidents, during the construction, operation and decommissioning phases of the Scheme, taking into consideration the proposed embedded mitigation, are likely to be managed to result in no significant effects.

## 23.11 Cumulative Effects

### Cumulative effects

23.11.1 Potential cumulative schemes are identified within Chapter 25: Cumulative Effects and Effect Interactions **[EN010170/APP/GH6.2.25]**, which identifies a Zone of Influence for the Scheme as well as any likely cumulative and in-combination effects with regard to major accidents and disasters. With the mitigation identified in the above sections and associated documents and ES

chapters to reduce the risk of major accidents and disasters, it is not expected that any cumulative schemes would increase the risk or severity of the residual effects associated with major accidents and disasters affecting the Scheme or resulting from works associated with the Scheme.

## 23.12 Summary

23.12.1 **Table 23.4** sets out a summary of the Major Accident and Disasters environmental effects.

**Table 23.7: Summary of Residual Effects for Major Accidents and Disasters**

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Local Population<br>Built Environment<br>Natural Environment | Increased risk of onsite surface water flooding due to increased precipitation due to climate change | Medium | Minor | The contractors will monitor weather forecasts and receive Environment Agency's (EA) flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms, flooding. Measure to be included within CEMP.<br>Further measures outlined within the OCEMP include the production of a Flood Risk Management Action Plan/Method Statement and Pollution Prevention Plan. | Minor Adverse | None | Minor Adverse (Not Significant) |
| Local population<br>Built environment<br>Natural environment | Increased risk of offsite surface water flooding due to increased precipitation | Medium | Minor | Use permeable surfacing for site access and the installation of linear infiltration trenches around Critical infrastructure. Between solar panels suitable planting (such as | Minor Adverse | None | Minor Adverse (Not Significant) |

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| | due to climate change | | | wildflower or grass mix) will be implemented to limit any potential concentrated rainfall run off.<br>Retention of vegetated groundcover, use of existing access routes, and appropriate site layout to avoid excessive disturbance near ditches. | | | |
| Local Population<br>Built Environment<br>Natural Environment | Increased offsite flooding due to increased water discharge to local watercourses | Medium | Moderate | Use permeable surfacing for site access and the installation of linear infiltration trenches around Critical infrastructure. Between solar panels suitable planting (such as wildflower or grass mix) will be implemented to limit any potential concentrated rainfall run off.<br>Retention of vegetated groundcover, use of existing access routes, and appropriate site layout to avoid excessive disturbance near ditches. | Moderate Adverse | Where deemed necessary (in areas where structures such as BESS or substations are proposed), a temporary drainage network will be installed prior to the commencement of construction and a robust maintenance plan, confirmed through the OCEMP [**EN010170/APP/GH7.1**], which should be maintained throughout the duration of construction works on | Minor Adverse (Not Significant) |

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| | | | | | | the Site. This is a precautionary and safeguarding approach to reduce the risk to the workers and help reduce the likelihood of the above significant effects. Similarly, during decommissioning a Decommissioning Statement should be maintained. | |
| Local population<br>Natural environment | Risk of Battery Fires | High | Minor | Measures outlined within the Outline Battery Storage Safety Management Plan (OBSSMP) [**EN010170/APP/GH7.7**] | Moderate/minor adverse | None | Moderate/minor (Not Significant) |
| Local population<br>Natural environment | Disturbance of unexploded ordnance (UXO) | Medium | Minor | Site clearance, the use of concrete feet and establishment of a UXO Risk Management Plan. | Minor adverse | None | Minor adverse (not significant) |
| Local population | Explosions from impacts on major accident | Medium | Minor | Consultation and agreement of construction/demobilisation methods will be | Minor adverse | None | Minor adverse (not significant) |

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| Natural environment | hazard site (Sywell) and three pipelines. | | | undertaken prior to works commencing (this would be covered by the protective provisions included in the DCO). | | | |
| Local Population: Road users | Increased risk of accidents from increased HGV use of local highways | Medium | Minor | Measures outlined within the OCTMP [**EN010170/APP/GH7.9**] | Minor adverse | None | Minor adverse (not significant) |
| Local Population<br>Underground utilities | Striking of underground services/utilities | Low | Minor | Consultation and agreement of construction/demobilisation methods will be undertaken prior to works commencing (this would be covered by the protective provisions included in the DCO). | Negligible | None | Negligible |
| Local Population<br>Built environment | Ground compressibility | Medium | Minor | OCEMP, such as transferring floor loads to improved soils or piles through concrete ground beams or frames | Minor adverse | None | Minor adverse (not significant) |

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| Natural environment | Habitats and Protected Species | Low | Minor | Measures outlined within the Landscape and Ecological Mitigation Plan [**EN010170/APP/GH7.5**] | Negligible | None | Negligible |
| **Operational Phase** | | | | | | | |
| Local population<br>Built environment<br>Natural environment | Increased risk of onsite surface water flooding due to increased precipitation due to climate change | Medium | Minor | Use of permeable surfacing for access tracks, the retention of vegetated groundcover across panelled areas, and the sequential location of critical infrastructure within Flood Zone 1. These features reduce runoff generation and help maintain the existing surface water regime. | Minor adverse | None | Minor adverse (not significant) |
| Local population<br>Built environment<br>Natural environment | Increased risk of offsite surface water flooding due to increased precipitation due to climate change | Medium | Minor | Use of permeable surfacing for access tracks, the retention of vegetated groundcover across panelled areas, and the sequential location of critical infrastructure within Flood Zone 1. These features reduce runoff generation and help | Minor adverse | None | Minor adverse (not significant) |

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| | | | | maintain the existing surface water regime. | | | |
| Local Population<br>Built Environment<br>Natural Environment | Increased offsite flooding due to increased water discharge to local watercourses | Medium | Minor | Use permeable surfacing for site access and the installation of linear infiltration trenches around Critical infrastructure. Between solar panels suitable planting (such as wildflower or grass mix) will be implemented to limit any potential concentrated rainfall run off.<br>Retention of vegetated groundcover, use of existing access routes, and appropriate site layout to avoid excessive disturbance near ditches. | Minor adverse | | Minor Adverse (Not Significant) |
| Local population<br>Natural environment | Risk of Battery Fires | High | Minor | Measures outlined within the Outline Battery Storage Safety Management Plan (OBSSMP) [**EN010170/APP/GH7.7**] | Moderate/minor adverse | None | Moderate/minor (Not Significant) |

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| Local Population: Road users | Glint and glare to vehicle drivers on national and regional roads | Medium | Minor | Vegetation in the form of instant screening. | Minor adverse | None | Minor adverse (not significant) |
| Pilots<br>Local population<br>Built environment | Glint and glare to pilots | Medium | Minor | None. | Minor adverse | None | Minor adverse (not significant) |
| Natural Environment | Habitats and Protected Species | Low | Minor | Measures outlined within the Landscape and Ecological Mitigation Plan [**EN010170/APP/GH7.5**] | Negligible | None | Negligible |
| **Decommissioning Phase** | | | | | | | |
| Local Population<br>Built Environment<br>Natural Environment | Increased risk of onsite surface water flooding due to increased precipitation due to climate change | Medium | Minor | The contractors will monitor weather forecasts and receive Environment Agency's (EA) flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms, flooding. Measure to be included within DEMP. | Minor Adverse | None | Minor Adverse (Not Significant) |

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| | | | | Further measures outlined within the ODS include the production of a water management plan. | | | |
| Local population<br>Built environment<br>Natural environment | Increased risk of offsite surface water flooding due to increased precipitation due to climate change | Medium | Minor | Use permeable surfacing for site access and the installation of linear infiltration trenches around Critical infrastructure. Between solar panels suitable planting (such as wildflower or grass mix) will be implemented to limit any potential concentrated rainfall run off.<br>Retention of vegetated groundcover, use of existing access routes, and appropriate site layout to avoid excessive disturbance near ditches. | Minor Adverse | None | Minor Adverse (Not Significant) |
| Local Population<br>Built Environment | Increased offsite flooding due to increased water discharge to | Medium | Moderate | Use permeable surfacing for site access and the installation of linear infiltration trenches around Critical infrastructure. Between solar panels suitable planting (such as | Moderate Adverse | Where deemed necessary (in areas where structures such as BESS or substations are proposed), a temporary drainage network will be installed | Minor Adverse (Not Significant) |

| Receptor | Description of Impact | Sensitivity of Receptor | Magnitude of Impact | Embedded Mitigation | Significance of Effect (with embedded mitigation) | Additional Mitigation Measures | Residual Effect (with additional mitigation) |
|---|---|---|---|---|---|---|---|
| Natural Environment | local watercourses | | | wildflower or grass mix) will be implemented to limit any potential concentrated rainfall run off.<br>Retention of vegetated groundcover, use of existing access routes, and appropriate site layout to avoid excessive disturbance near ditches. | | prior to the commencement of construction and a robust maintenance plan, confirmed through the OCEMP [**EN010170/APP/GH7.1**], which should be maintained throughout the duration of construction works on the Site. This is a precautionary and safeguarding approach to reduce the risk to the workers and help reduce the likelihood of the above significant effects. Similarly, during decommissioning a Decommissioning Statement should be maintained. | |

## References

Ref 23.1 Green Hill Solar Farm (2024) Scoping Report. Available at: EN010170-000012-GHSF - Scoping Report.pdf

Ref 23.2 UK Government. (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. [online] Available at: https://www.legislation.gov.uk/uksi/2017/572/contents

Ref 23.3 UK Government. (1974). Health and Safety at Work etc. Act 1974. [online] Available at: https://www.legislation.gov.uk/ukpga/1974/37/contents

Ref 23.4 UK Government. (2015). The Control of Major Accident Hazards Regulations 2015. [online] Available at: https://www.legislation.gov.uk/uksi/2015/483/contents

Ref 23.5 UK Government. (2015). The Construction (Design and Management) Regulations 2015. [online] Available at: https://www.legislation.gov.uk/uksi/2015/51/contents

Ref 23.6 UK Government. (2005). The Regulatory Reform (Fire Safety) Order 2005. [online] Available at: https://www.legislation.gov.uk/uksi/2005/1541/contents

Ref 23.7 UK Government. (2023). Overarching National Policy Statement for Energy (EN-1). [online] Available at: https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1

Ref 23.8 UK Government. (2024). National Planning Policy Framework. [online] Available at: https://www.gov.uk/guidance/national-planning-policy-framework

Ref 23.9 IEMA. (2020). Major Accidents and Disasters in EIA: An IEMA Primer. [online] Available at: [redacted]

Ref 23.10 National Fire Chiefs Council. (2022). Grid Scale Battery Energy Storage Systems – Guidance for Fire and Rescue Services. [online] Available at: [redacted]

Ref 23.11 UK Government. (2020). National Risk Register 2020. [online] Available at: https://www.gov.uk/government/publications/national-risk-register-2020