

Light Valley Solar

Environmental Statement Volume 3

Appendix 7.1: Climate Change Resilience Assessment

Document Reference: EN0110012/APP/LVS/06.03.07.01

February 2026

Planning Inspectorate Reference: EN0110012
APFP Regulation 5(2)(a)



Light Valley
Solar

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Light Valley Solar

DCO Submission

Appendix 7.1: Climate Change Resilience Assessment

Regulation Reference	APFP Regulation 5(2)(a)
Planning Inspectorate Case Reference	EN0110012
Application Document Reference	EN0110012/APP/LVS/06.03.07.01
Author	Light Valley Solar Limited

Version	Date	Status of Version
Issue 1.0	February 2026	DCO Submission

Contents

1	Climate Change Resilience Assessment	1
1.1	Introduction	1
1.2	Receptors	1
1.3	Assumptions	1
1.4	Results	2

List of tables

Table 1	Climate change resilience assessment	3
---------	--------------------------------------	---

1 Climate Change Resilience Assessment

1.1 Introduction

1.1.1 The assessment of Climate Change Resilience (CCR) is based on the description of the Proposed Development information provided by the Applicant in Chapter 1: Introduction (ES Volume 1) [EN0110012/APP/LVS/06.01.01] and Chapter 2: The Proposed Development (ES Volume 1) [EN0110012/APP/LVS06.01.02]; all assumptions have been agreed with the client team. This Appendix should be read in conjunction with Chapter 7: Climate Change Resilience (ES Volume 1) [EN0110012/APP/LVS/06.01.07].

1.2 Receptors

1.2.1 The receptors (both assets and processes) included within the Proposed Development that would potentially be at risk from climate change impacts are as follows:

- 1) Solar PV;
- 2) BESS;
- 3) Substations, including switchgears and transformers;
- 4) Conversion units and 33 kV switch room;
- 5) On-site cabling (partially underground);
- 6) Cable Route Corridors;
- 7) Drainage systems;
- 8) Land;
- 9) Staff, workers and visitors on-site;
- 10) Plant and vehicles (including vehicles for workers' travel and plant needed for scheduled and unforeseen maintenance and replacement activities);
- 11) Security measures including perimeter fencing and CCTV; and
- 12) Access routes.

1.2.2 The assessment includes the main assets that are at risk from projected changes in climate. In addition, the assessment also includes the electricity generation process that may be at risk from the projected changes in climate as various climate hazards may have the potential to halt power generation and transmission or reduce generation efficiency if left unmitigated.

1.3 Assumptions

1.3.1 The following assumptions were made during the scoring process:

- 1) It is assumed that the embedded mitigation measures and management plans identified in Table 1 will be implemented effectively to provide appropriate levels of mitigation for the projected future climate.
- 2) It is assumed that the data, information, and sources obtained from all organisations, institutions, bodies, or individuals is accurate at the time of its acquisition and/or consultation.
- 3) It is assumed that where any information has been obtained from respected open-source repositories, these sources were accurate at the time of writing and all citations, copyright, and distribution requirements are correct and clearly communicated.
- 4) It is assumed that mitigation measures for effects assessed by other topics will be implemented effectively and that relevant management plans will be effectively implemented and provide appropriate mitigation for extreme weather-related effects during the operation of the Proposed Development.
- 5) The substations are regarded as a flood-sensitive asset and as such their minimum Finished Floor Level (FFL) will be set to the design event flood level plus 0.3m freeboard or the credible maximum scenario flood level, whichever is greater, so flooding is very unlikely to damage electrical equipment within the substation.
- 6) Selection and design of the solar PV panels, heating, ventilation, and air conditioning (HVAC) and liquid cooling systems will account for future climate projections.
- 7) It is assumed that the BESS will be mounted on concrete foundations and include appropriate drainage systems, as per Chapter 2: The Proposed Development (ES Volume 1) **[EN0110012/APP/LVS/06.01.02]**.
- 8) It is assumed that no permanent on-site staff will be required to operate the Proposed Development with the exception of scheduled maintenance and replacement activities, and occasional unplanned (reactive) repair and replacement activities, as per Chapter 2: The Proposed Development (ES Volume 1) **[EN0110012/APP/LVS/06.01.02]**.
- 9) It is assumed that the main components of the Proposed Development, as outlined within Chapter 2: The Proposed Development (ES Volume 1) **[EN0110012/APP/LVS/06.01.02]**, will be replaced at least once during the operational life. The replaced components will be reflective of the latest design standards, accounting for current climate conditions at the time of replacement.

1.4 Results

- 1.4.1 Table 1 presents the full details of the CCR assessment of the Proposed Development. It contains information on all relevant climate hazards and receptors identified as part of this assessment, including embedded mitigation measures relevant to CCR.

Table 1 Climate change resilience assessment

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
1	BESS	Extreme heat	Efficiency affected by extreme heat. Battery cooling systems might be affected. Increased requirements on HVAC and liquid cooling systems. Increased fire risk.	The BESS systems would include HVAC systems contained within the individual equipment containers. Battery systems will integrate liquid cooling systems for each battery module for an effective way to reduce fire risks. Selection and design of HVAC systems will take into account hotter future climate. A Battery Fire Safety Management Plan will be in place during the operation phase. An Outline Battery Fire Safety Management Plan (oBFSMP) has been provided with the DCO Application setting out the measures for inclusion in the final plan.	Low Mean daily summer temperatures are expected to increase by 4.3°C (from 15.8°C to 20.2°C) in the period between 2050 and 2080. Number of hot days (daily maximum temperature higher than 25°C) projected to increase from baseline 10.4 days per year to 55.6 days per year in the period between 2050 and 2080.	Medium Extreme heat has the potential to affect the efficiency of BESS and increase the cooling demand and increase fire risk. This could result in unplanned partial interruption to operation, large safety risks and large financial loss. The impact on operation is likely to be partial due to the measures set out in the oBFSMP. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.	Minor (NS)	Not Significant	None proposed.
2	BESS	Storms and high winds	Direct damage due to high winds and storm conditions. Lightning may cause damage or malfunction.	The Proposed Development will be designed with stronger winds accounted for. Appropriate lightning protection will be constructed. Perimeter fencing will reduce the risk of wind-blown debris damaging the BESS.	Low There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and intensity of winter	Medium Storms and high winds have the potential to damage the BESS operations. This risk has the potential to result in large financial losses, large safety risks and unplanned partial interruption to operation. This risk can be reduced through weather	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					storms is expected over the UK. It is anticipated that the risk of damage will be reduced through design mitigation.	resilient design, location consideration and material specifications, accounting for higher winds and increased likelihood of damages by wind-blown debris. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.			
3	BESS	Heavy precipitation and flooding	Direct damage due to flooding and heavy rainfall	The Proposed Development will be designed to account for increased winter precipitation. SuDS will be incorporated into the design to manage surface water runoff on Solar Development Sites. The BESS Development Areas will be located outside of Flood Zone 2 and 3 to minimise loss of flood plain and associated adverse flood risk effects. This Design Principle has been achieved in the current Proposed Development layout for the Solar Development Sites shown in Figure 2.1: Illustrative Site Layout Plans (ES	Low Mean precipitation rates in the region are projected to change, increasing by 19% in winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080. It is assumed that the risk of damage from flooding will be reduced through design mitigation as per Appendix 15.1: Flood Risk Assessment (including Drainage Strategy) (ES Volume 3)	Medium Heavy precipitation and flooding have the potential to affect operations of the BESS. This risk has the potential to result in large financial losses, large safety risks and unplanned partial interruption to operation. This risk can be reduced through weather resilient design and location consideration. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				<p>Volume 2) [EN0110012/APP/L VS/06.02.02.01.[01-08]].</p> <p>The minimum Finished Floor Level (FFL) will be set to the design event flood level plus 0.3 m freeboard or the credible maximum scenario flood level, whichever is greater.</p>	[EN0110012/APP/L VS/ 06.03.15.01b].				
4	BESS	Drought	Potential direct damage caused by land subsidence due to drought and shrink/swell of clay soils.	<p>Geotechnical ground investigations will be completed prior to construction to inform the detailed design of appropriate foundations for each Solar Development Site within the Proposed Development. The foundation designs will take into consideration the potential for ground movement in case of drought events and incorporate appropriate mitigation into the design.</p>	<p>Low</p> <p>While extreme heat and drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath the Proposed Development typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Proposed Development is in an area where potential change in subsidence due to climate change is unlikely. Individual assets are located either below ground or, in the case of</p>	<p>Medium</p> <p>Drought has the potential to affect BESS operations caused by land subsidence and shrink/swell of clay soils over time. This risk has the potential to result in large financial losses, large safety risks and unplanned partial interruption to operation. Geotechnical investigations will inform foundation designs which will mitigate the impacts of shrink/swell soils. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.</p>	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					BESS, on concrete beds.				
5	Solar panels	Extreme heat	Reduced energy generation efficiency due to temperatures exceeding 25°C in summer (Ref 2). Due to increases in winter mean daily temperature, there might be improvements in panel efficiency and battery storage during winter.	Choice of high-quality solar panels with heat-resistant PV cells and module material specifications that can withstand and maintain efficient generation during hot days and heatwaves. Overplanting will mitigate against potential energy generation efficiency losses.	Low Mean daily summer temperatures are expected to increase by 4.3°C (from 15.8°C to 20.1°C) in the period between 2050 and 2080. Number of hot days (daily maximum temperature higher than 25°C) projected to increase from baseline 10.4 days per year to 55.6 days per year in the period between 2050 and 2080. The risk of reduced energy generation efficiency in summer months can be mitigated through choice of high-quality PV. It will also be partially offset by higher temperatures in winter months which will likely increase energy generation efficiency. This risk is also mitigated by overplanting.	Low Due to a marked increase in the number of heatwaves and hot days per year (above 25°C), there is a potential of small financial loss due to reduced power generation efficiency. It is possible this will result in unplanned partial interruption to operations, however this risk can be reduced through relevant embedded mitigation measures, particularly selection of high-quality solar PV and heat resilient material specifications. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
6	Solar panels	Storms and high winds	Direct damage due to high winds and storm conditions. Lightning may cause damage. High winds can cause higher debris and dust accumulation on the surface of solar panels, leading to reduced power production (Ref 3).	Design accounts for potential falling trees and stronger winds, including a wind uplift. Appropriate lightning protection will be constructed. Regular maintenance and cleaning of the solar panels will be carried out to ensure continued efficiency of power generation.	Medium There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and intensity of winter storms is expected over the UK.	Low Solar panels are at risk of direct damage from high winds and wind-blown debris. Indirectly, stormy conditions may decrease power generation efficiency through increased dust accumulation on solar panel surfaces and lead to small financial loss. This risk can be reduced through weather resilient design and material specifications, accounting for higher winds and increased likelihood of damages by wind-blown debris. Depending on the scale of damage following a storm, this can result in an unplanned partial interruption to operation. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
7	Solar panels	Heavy precipitation and flooding	Direct damage due to flooding and heavy rainfall.	Where practicable, locating flood-sensitive infrastructure within Flood Zones 2 and 3 will be avoided as far as practical to avoid or reduce the potential for flood risk to the Proposed Development. The Proposed Development will be designed with increased winter precipitation accounted for. Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b] includes a number of adaptation measures that would be considered in the detailed design and operations management.	Medium Mean precipitation rates in the region are projected to change, increasing by 19% in winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080.	Low Solar panels are at risk of direct damage from heavy rainfall and flooding. This could lead to large financial loss due to repair/replacement required and reduced power generation. This risk can be reduced through relevant embedded mitigation measures, particularly through weather resilient material specification and through measures outlined in the secured Management Plans. Depending on the scale of damage following a storm, this can result in an unplanned partial interruption to operation. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.
8	Solar panels	Drought	Dry conditions may cause increased dust accumulation on solar PV and reduce energy generation. Potential direct	Regular maintenance and cleaning of the solar panels will be carried out to ensure continued	Low Mean summer precipitation is expected to decrease by 24% in the period between	Low Drought has the potential to affect the operation of solar panels due to land subsidence	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
			damage caused by land subsidence due to drought and shrink/swell of clay soils.	efficiency of power generation. Geotechnical ground investigations will be completed prior to construction to inform the detailed design of appropriate foundations for each Solar Development Site within the Proposed Development.	the 2050 and 2080 compared to the baseline. The number of dry spells (10 days or more with no precipitation) is expected to increase by 20% for the period between 2050 and 2080 compared with the baseline. While drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath the Proposed Development typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Proposed Development is in an area where potential change in subsidence due to climate change is unlikely.	and shrink/swell of clay soils over time and through increased dust accumulation on the surface of solar panels during drought conditions. This may reduce energy generation and lead to small financial loss. Regular maintenance and panel cleaning is likely to mitigate the risk of dust impacting operations with little to no interruption to operation. Direct damages from land subsidence due to drought are considered unlikely but could result in an unplanned partial disruption to operation. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.			

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
9	On-site cabling	Extreme heat	Potential direct damage caused by land subsidence due to extreme heat and drought and shrink/swell of clay soils.	The design of the Proposed Development and the material specifications for its key components will account for increases in mean summer and winter temperatures and increased frequency of heatwaves. It has been noted that average daily maximum summer temperatures are projected to increase beyond the regional heatwave definition threshold of 25°C, occurring approximately five times more frequently than the current baseline.	Low While extreme heat and drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath each Solar Development Site typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates each Solar Development Site is in an area where potential change in subsidence due to climate change is unlikely. The design of the Proposed Development will include embedded mitigation.	Low There is potential for land subsidence to cause direct damage to on-site cabling and disrupt cable connections between solar PV, conversion units and BESS, resulting in small financial loss and possible unplanned partial interruption to operation. However, these are likely to incur very small or no safety risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Negligible (NS)	Not Significant	None proposed.
10	On-site cabling	Storms and high winds	Direct damage due to high winds and storm conditions.	Increased storm conditions may include both high winds and flooding. Appendix 15.1 Flood Risk Assessment (ES Volume 3) [EN0110012/APP/LVS/ 06.03.15.01b] includes a number of adaptation	Medium There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards,	Low There is potential for storms and high winds to cause direct damage to on-site cabling and disrupt cable connections between solar PV, conversion units and BESS, which could result in	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				measures that would be considered in the detailed design and operations management. Design takes into account potential falling trees as a result of high winds and will be designed with stronger winds accounted for. Appropriate lightning protection will be constructed.	increase in the frequency and intensity of winter storms is expected over the UK.	unplanned partial interruption to operation and small financial loss. However, situating the cabling underground will mitigate these risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.			
11	On-site cabling	Heavy precipitation and flooding	Direct damage due to flooding and heavy rainfall.	Where practicable, locating flood-sensitive infrastructure within Flood Zones 2 and 3 will be avoided as far as practical to avoid or reduce the potential for flood risk to the Proposed Development. The Proposed Development will be designed with increased winter precipitation accounted for.	Medium Mean precipitation rates in the region are projected to change, increasing by 19% in the winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080.	Low There is potential for heavy rainfall and precipitation to cause direct damage to on-site cabling and disrupt cable connections between solar PV, conversion units and BESS, resulting in very small or no safety risks. However, any unplanned partial interruption to operations may result in small financial loss. Situating the cabling underground will mitigate these risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
12	On-site cabling	Drought	Potential direct damage caused by land subsidence due to drought.	Geotechnical ground investigations will be completed prior to construction to inform the detailed design of on-site cabling within the Solar Development Sites.	Low While extreme heat and drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions of the sites typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the sites are in an area where potential change in subsidence due to climate change is unlikely.	Low There is potential for land subsidence to cause direct damage to on-site cabling and disrupt cable connections between solar PV, conversion units and BESS, resulting in very small or no safety risks. However, any unplanned partial interruption to operations may result in small financial loss. Situating the cabling underground will mitigate these risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.
13	Cable Route Corridors	Extreme heat	Potential direct damage caused by land subsidence due to drought.	Geotechnical ground investigations will be completed prior to construction to inform the detailed design of the Cable Route Corridors.	Low While extreme heat and drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions of the Cable Route Corridors typically have a negligible to low geohazard risk, with a low risk for	Medium In the unlikely event of Cable Route Corridor damage due to land subsidence, it is assumed that the damage will result in very small or no safety risks as the cables will be buried underground. However, any unplanned partial interruption to operations may result in large	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					shrink-swell potential of shallow clays and the cables are located below ground.	financial loss over a short term. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.			
14	Cable Route Corridors	Storms and high winds	Assumed no impact as the cables will be under ground.	None considered.	Negligible The likelihood of storms and high winds being so severe as to impact infrastructure components buried under ground is considered negligible.	Low In the unlikely event of Cable Route Corridor damage due to storms and high winds, it is assumed that these can be easily repaired and that the damage will result in very small or no safety risks as the cables will be buried underground. However, any unplanned partial interruption to operations may result in small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Negligible (NS)	Not Significant	None proposed.
15	Cable Route Corridors	Heavy precipitation and flooding	Direct damage due to flooding and heavy rainfall.	The Cable Route Corridors is a buried, underground asset that will be low risk from all sources of flooding, as per Appendix	Low Mean precipitation rates in the region are projected to change, increasing by 19% in winter and decreasing by	Low In the unlikely event of Cable Route Corridor damage due to heavy precipitation and flooding, it is	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				15.1: Flood Risk Assessment (including Drainage Strategy) (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b].	24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080. However, as the Cable Route Corridors are buried underground and the terrain is mostly flat, it is considered unlikely that they would be impacted by heavy precipitation and flooding.	assumed that these can be easily repaired and that the damage will result in very small or no safety risks as the cables will be buried underground. However, any unplanned partial interruption to operations may result in small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.			
16	Cable Route Corridors	Drought	Potential direct damage caused by land subsidence due to drought.	Geotechnical ground investigations will be completed prior to construction to inform the detailed design of on-site cabling within the Solar Development Sites.	Low While drought events are projected to become more frequent under future climate change, the risk of land subsidence is considered low as the ground conditions of the Cable Route Corridors typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates each Solar Development Site is in an area where	Low In the unlikely event of Cable Route Corridor damage due to drought, it is assumed that these can be easily repaired and that the damage will result in very small or no safety risks as the cables will be buried underground. However, any unplanned partial interruption to operations may result in small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					potential change in subsidence due to climate change is unlikely.	consequence is considered to be low.			
17	Plant and vehicles	Extreme heat	Equipment overheating.	During the operation stage, relevant health and safety measures will be followed and on-site activities will not be carried out during extreme weather events. During the decommissioning stage, prevention measures will be in place in line with the DEMP. An Outline DEMP [EN0110012/APP/L VS/07.04] is provided with the DCO Application.	High Mean daily summer temperatures are expected to increase by 4.3°C (from 15.8°C to 20.1°C) in the period between 2050 and 2080. Number of hot days (daily maximum temperature higher than 25°C) projected to increase from baseline 10.4 to 55.6 days per year in the period between 2050 and 2080.	Negligible Extreme heat has the potential to impact individual vehicles and plant. However, as these are individual assets that are easily replaced, overheated plant and vehicles would cause little/no interruption to operation, little financial loss and very small safety risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be negligible.	Minor/ Negligible (NS)	Not Significant	None proposed.
18	Plant and vehicles	Storms and high winds	Direct damage due to high winds and storm conditions. Lightning may cause damage.	During the operation stage, relevant health and safety measures will be followed and on-site activities will not be carried out during extreme weather events. During the decommissioning stage, prevention measures will be in place in line with the DEMP. An Outline DEMP [EN0110012/APP/L	Medium There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and intensity of winter	Negligible Storms and high winds have the potential to impact individual vehicles and plant. Damaged plant and vehicles would be easily replaced and therefore cause little/no interruption to operation, little financial loss and very small safety risks. The assessment has	Negligible (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				VS/07.04] will be provided with the DCO Application.	storms is expected over the UK.	sought to take a conservative approach given future climate uncertainty; this consequence is considered to be negligible.			
19	Plant and vehicles	Heavy precipitation and flooding	Direct damage due to flooding and heavy rainfall.	During the operation stage, relevant health and safety measures will be followed and on-site activities will not be carried out during extreme weather events. An Outline Flood Warning and Evacuation Plan (oFWEP) will be developed as per Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b] . During the decommissioning stage, prevention measures will be in place in line with the DEMP. An Outline DEMP [EN0110012/APP/L VS/07.04] will be provided with the DCO Application.	Medium Mean precipitation rates in the region are projected to change, increasing by 19% in winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080. Heavy precipitation and flooding events have the potential to occur more than once per year, especially during the winter months.	Negligible Heavy precipitation and flooding have the potential to impact individual vehicles and plant. Damaged plant and vehicles would be easily replaced and therefore cause little/no interruption to operation, little financial loss and very small safety risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be negligible.	Negligible (NS)	Not Significant	None proposed.
20	Plant and vehicles	Drought	Potential direct damage caused by land subsidence due to drought.	During the operation stage, relevant health and safety measures will be followed and on-site activities will not be carried out during extreme weather events. During the decommissioning	Low Mean summer precipitation is expected to decrease by 24% in the period between the 2050 and 2080 compared to the baseline.	Negligible Drought is unlikely to cause any impact to individual vehicles, however damaged plant and vehicles would be easily replaced. This would cause little/no	Negligible (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				<p>stage, prevention measures will be in place in line with the DEMP. An Outline DEMP [EN0110012/APP/VS/07.04] will be provided with the DCO Application.</p>	<p>The number of dry spells (10 days or more with no precipitation) is expected to increase by 20% for the period between 2050 and 2080 compared to the baseline.</p> <p>While drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath the Solar Development Sites typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates each Solar Development Site is in an area where potential change in subsidence due to climate change is unlikely.</p>	<p>interruption to operation, little financial loss and very small safety risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be negligible.</p>			
21	Fencing and security measures (incl. CCTV)	Extreme heat	Extreme heat may lead to overheating of electrical equipment and reduce its lifespan.	To avoid the risk of overheating during extreme heat conditions, the CCTV and other electrical security measures will be chosen based on their high quality and operational	Low While extreme heat and drought events are projected to become more frequent under future climate, the risk of impact on fencing and security measures is	Negligible Extreme heat may impact electrical equipment, e.g. CCTV, however other physical security measures are unlikely to be affected. Security measures are	Negligible (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				parameters that can withstand high temperatures.	considered low due to the embedded mitigation accounting for hotter climate.	individual assets that are not critical to the power generation process, and their damage will cause little/no interruption to operation. Their damage will likely result in small or no safety risks and little financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be negligible.			
22	Fencing and security measures (incl. CCTV)	Storms and high winds	Direct damage due to high winds and storm conditions	Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b] includes a number of adaptation measures that would be considered in the detailed design and operations management. Design takes into account potential falling trees and will be designed accounting for stronger winds. Appropriate lightning protection will be constructed.	Medium There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and intensity of winter storms is expected over the UK.	Negligible Storms and high winds have the potential to impact physical security measures. However, as they are individual assets that are not critical to the power generation process, their damage will cause little/no interruption to operation. Their damage will likely result in small or no safety risks and little financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is	Negligible (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
						considered to be negligible.			
23	Fencing and security measures (incl. CCTV)	Heavy precipitation and flooding	Direct damage due to flooding and heavy rainfall.	Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/LS/ 06.03.15.01b] includes a number of adaptation measures that would be considered in the detailed design and operations management. Design takes into account potential falling trees and will be designed with increases in precipitation accounted for. Appropriate lightning protection will be constructed.	High Mean precipitation rates in the region are projected to change, increasing by 19% in winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080.	Negligible Heavy precipitation and flooding have the potential to impact physical security measures. However, as these are individual assets that are not critical to the power generation process, their damage will cause little/no interruption to operation. Their damage will likely result in small or no safety risks and little financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be negligible.	Minor/ Negligible (NS)	Not Significant	None proposed.
24	Fencing and security measures (incl. CCTV)	Drought	Potential direct damage caused by land subsidence due to drought.	None considered.	Low While extreme heat and drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath each Solar	Negligible Drought is unlikely to have an impact on physical security measures. As these are individual assets that are not critical to the power generation process, their damage will cause little/no interruption to operation. Their	Negligible (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					Development Sites typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Solar Development Sites are in an area where potential change in subsidence due to climate change is highly unlikely.	damage will likely result in small or no safety risks and little financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be negligible.			
25	Land	Extreme heat and drought	Possible land subsidence due to extreme heat and drought.	None considered.	Negligible While extreme heat events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath the Proposed Development typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Proposed Development is in an area where potential change in subsidence due to climate change is highly unlikely.	High If the stability of the soil within the Proposed Development is compromised, this has a potential to affect and physically damage all other assets and lead to large financial losses and safety risks. It has the potential to lead to unplanned total interruption to operation that is difficult to remedy. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be high.	Minor/ Negligible (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
26	Drainage systems	Extreme heat	Potential direct damage caused by land subsidence due to extreme heat and drought.	None considered.	Negligible While extreme heat and drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath each Solar Development Site typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Solar Development Sites are in an area where potential change in subsidence due to climate change is highly unlikely.	Low Extreme heat and associated drought could cause land subsidence and physically damage the drainage system and impair its proper functioning, increasing the risk of flooding on each Solar Development Site, resulting in unplanned partial interruption to operation and small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Negligible (NS)	Not Significant	None proposed.
27	Drainage systems	Storms and high winds	Drainage could be blocked by fallen trees or debris.	The drainage systems will be designed in accordance with best practice standards, and the implementation of a robust maintenance plan and regular inspections will help mitigate the risk of flooding due to blockages, as outlined in the oOEMP	Low There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and intensity of winter	Low Storms and high winds have the potential to impact drainage systems. During stormy conditions, falling trees and wind-blown debris may block drainage and impair its proper functioning, increasing the risk of flooding on each Solar Development	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				[EN0110012/APP/L VS/07.03]. A third-party management and maintenance team should be established to oversee the upkeep of these features throughout the lifetime of the Proposed Development.	storms is expected over the UK. However, it is anticipated that embedded mitigation measures reduce this risk and that the drainage system design will account for increased frequency and severity of storms under future climate as per Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b].	Site. This may result in unplanned partial interruption to operation and small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.			
28	Drainage systems	Heavy precipitation and flooding	The drainage system could be overwhelmed by heavy precipitation.	Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b] includes a number of adaptation measures that would be considered in the detailed design and operations management. Design takes into account potential falling trees and will be designed with increases in precipitation accounted for and in accordance with best practice standards. A third-party management and maintenance team should be established to	Medium Mean precipitation rates in the region are projected to change, increasing by 19% in the winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080. It is anticipated that embedded mitigation measures and management plans, such as Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b],	Low Heavy rainfall may overwhelm drainage systems and impair their proper functioning, increasing the risk of flooding on each Solar Development Site. This may result in unplanned partial interruption to operation and small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				<p>oversee the upkeep of these features throughout the lifetime of the Proposed Development. Regular inspection and maintenance of the drainage systems, Sustainable Drainage Systems (SuDS) and culverts will take place throughout the operational phase. This will be undertaken in accordance with good practice guidance, as per the oOEMP [EN0110012/APP/LVS/07.03].</p>	<p>will be in place and will reduce the risk of drainage systems becoming overwhelmed or damaged by heavy precipitation.</p>				
29	Drainage systems	Drought	Potential direct damage caused by land subsidence due to drought.	None considered.	<p>Low While drought events are projected to become more frequent under future climate, the risk from land subsidence is considered low as the ground conditions beneath the Proposed Development typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Proposed</p>	<p>Low Physical damage from land subsidence might disrupt proper functioning of on-site drainage and increase the likelihood of flooding. This may result in unplanned partial interruption to operation and small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.</p>	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					Development is in an area where potential change in subsidence due to climate change is unlikely.				
30	Conversion units and 33 kV switch room	Extreme heat	Potential damage and reduced lifetime due to overheating.	The design of the Proposed Development and the material specifications for its key components will take into account increases in mean summer and winter temperatures and increased frequency of heatwaves. It has been noted that average daily maximum summer temperatures are projected to increase beyond the regional heatwave definition threshold of 25°C, occurring approximately 5-times more frequently than the current baseline.	Low Mean daily summer temperatures are expected to increase by 4.3°C (from 15.8°C to 20.1°C) in the period between 2050 and 2080. Number of hot days (daily maximum temperature higher than 25°C) projected to increase from baseline 10.4 days per year to 55.6 days per year in the period between 2050 and 2080. However, it is anticipated that this risk will be reduced through good design and embedded mitigation.	Low Conversion units and switch rooms house electrical equipment required to convert DC generated by the solar PV into AC that can be exported to the National Grid. Damages to conversion units and switch rooms can result in unplanned partial interruption to operation and small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.
31	Conversion units and 33 kV switch room	Storms and high winds	Direct damage due to high winds and storm conditions. Lightning may cause damage or malfunction.	Design takes into account potential falling trees and will be designed with stronger winds accounted for. Appropriate lightning protection will be constructed.	Medium There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and	Low Conversion units and switch rooms house electrical equipment required to convert DC generated by the solar PV into AC that can be exported to the National Grid. Storms and high winds have the potential for damaging the	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					intensity of winter storms is expected over the UK.	conversion units; however the electrical equipment is housed to protect valuable assets. Damages to conversion units and switch rooms can result in unplanned partial interruption to operation and small financial loss, however the housing of these assets mitigates the risk. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.			
32	Conversion units and 33 kV switch room	Heavy precipitation and flooding	Direct damage due to flooding and heavy rainfall.	Where practicable, locating flood-sensitive infrastructure within Flood Zones 2 and 3 will be avoided as far as practical to avoid or reduce the potential for flood risk to the Proposed Development. The Proposed Development will be designed with increased winter precipitation accounted for. Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L	Medium Mean precipitation rates in the region are projected to change, increasing by 19% in winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080. It is anticipated that this risk will be reduced through embedded mitigation measures as flood zones will	Low Conversion units and switch rooms house electrical equipment required to convert DC generated by the solar PV into AC that can be exported to the National Grid. Heavy precipitation and rainfall have the potential for damaging the conversion units; however the electrical equipment is housed to protect valuable assets. Damages to conversion units and switch rooms	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				VS/ 06.03.15.01b] includes a number of adaptation measures that would be considered in the detailed design and operations management, including a set minimum Finished Floor Level (FFL) of the design event flood level plus 0.3m freeboard or the credible maximum scenario flood level, whichever is greater.	be avoided when placing flood sensitive infrastructure.	can result in unplanned partial interruption to operation and small financial loss. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.			
33	Conversion units and 33 kV sub-distribution switch room	Drought	Potential direct damage caused by land subsidence due to drought.	Geotechnical ground investigations will be completed prior to construction to inform the detailed design of appropriate foundations for each Solar Development Site within the Proposed Development. The foundation designs will take into consideration the potential for ground movement in case of drought events and incorporate appropriate mitigation into the design.	Low While drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath the Proposed Development typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Proposed Development is in an area where potential change in subsidence due to	Low Drought has the potential to affect the conversion units and switch rooms due to land subsidence and shrink/swell of clay soils over time. Damages to conversion units and switch rooms can result in unplanned partial interruption to operation and small financial loss. Geotechnical investigations will inform foundation designs which will mitigate the impacts of shrink/swell soils. The assessment has sought to take a conservative approach given future climate uncertainty; this	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					climate change is unlikely.	consequence is considered to be low.			
34	Workers, staff and visitors on-site	Extreme heat and drought	Heat-related illness. Increased risk of dehydration, however more likely with extreme temperatures.	Adherence to relevant health and safety measures and legislation. Measures include: Work should be scheduled during the cooler parts of the day, such as early mornings or late afternoons. Shade structures should be provided in rest areas, and workers should have access to drinking water and regular breaks. Workers should be encouraged to wear UV-protective clothing, hats, and sunglasses. Sunscreen should be made available as part of personal protective equipment (PPE), and shaded work zones should be established where feasible.	Low Mean daily summer temperatures are expected to increase by 4.3°C (from 15.8°C to 20.1°C) in the period between 2050 and 2080. Number of hot days (daily maximum temperature higher than 25°C) projected to increase from baseline 10.4 days per year to 55.6 days per year in the period between 2050 and 2080. The Proposed Development will not be permanently staffed during its operational phase and maintenance activities will be scheduled to avoid working during extreme heat as far as reasonably practicable. During construction phase, appropriate health and safety measures will be in place to protect workers and PPE will be provided when necessary to reduce the risk of heat-related illness.	Medium Working on each Solar Development Site during extreme heat may pose health and safety risks to human receptors. This is a large safety risk, however this will be mitigated through appropriate health and safety measures and provision of PPE where necessary. During periods of drought, human receptors might be at an increased risk of dehydration. This risk is low if health and safety measures are followed and sufficient drinking water is provided to persons on working within the Proposed Development. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
35	Workers, staff and visitors on-site	Storms and high winds	Physical health and safety risks.	Adherence to relevant health and safety measures. Rescheduling on-site visits and maintenance activities during extreme weather conditions.	Low There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and intensity of winter storms is expected over the UK.	Medium Working within the Proposed Development during storms and high winds has the potential to lead to large safety risks to human receptors. However, this will be mitigated as working during extreme weather events will be avoided and other appropriate health and safety measures such as rescheduling site visits, and PPE where necessary will be implemented. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.	Minor (NS)	Not Significant	None proposed.
36	Workers, staff and visitors on-site	Heavy precipitation and flooding	Physical health and safety risks.	Adherence to relevant health and safety measures. Rescheduling on-site visits and maintenance activities during extreme weather conditions. An Outline Flood Warning and Evacuation Plan (oFWEP) will be developed as per Appendix 15.1: Flood Risk Assessment (ES Volume 3)	Low Mean precipitation rates in the region are projected to change, increasing by 19% in the winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080. However, risk	Medium Working within the Proposed Development during heavy precipitation and flood events has the potential to lead to large safety risks to human receptors, e.g. risk of injury from moving debris in floodwater. However, this will be mitigated as working during extreme weather events will	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
				[EN0110012/APP/VS/ 06.03.15.01b] and will contain mitigation measures relevant to human receptors.	to human receptors is unlikely as relevant health and safety measures will be in place and work during extreme weather events will be avoided.	be avoided and other appropriate health and safety measures such as rescheduling site visits, and PPE where necessary will be implemented. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.			
37	Access routes	Extreme heat	Melting of asphalt caused by high temperatures.	The design of the Proposed Development and the material specifications for its key components will account for increases in mean summer and winter temperatures and increased frequency of heatwaves. It has been noted that average daily maximum summer temperatures are projected to increase beyond the regional heatwave definition threshold of 25°C, occurring approximately 5-times more frequently than the current baseline.	Low Mean daily summer temperatures are expected to increase by 4.3°C (from 15.8°C to 20.1°C) in the period between 2050 and 2080. Number of hot days (daily maximum temperature higher than 25°C) projected to increase from baseline 10.4 days per year to 55.6 days per year in the period between 2050 and 2080.	Low Melting of access tracks during extreme heat events could obstruct access to each Solar Development Site and cause difficulties carrying out repair and maintenance activities for up to several days. This has the potential to result in unplanned partial interruption to operation and moderate safety risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
38	Access routes	Storms and high winds	Direct damage due to high winds and storm conditions, e.g. blocked due to falling debris.	Design takes into account potential falling trees and will be developed with stronger winds accounted for.	Medium There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and intensity of winter storms is expected over the UK.	Negligible Access routes may become damaged or blocked during stormy conditions due to falling trees and wind-blown debris and cause difficulties carrying repair and maintenance activities. This would result in little financial loss, little/no interruption to operation and very small or no safety risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be negligible.	Negligible (NS)	Not Significant	None proposed.
39	Access routes	Heavy precipitation and flooding	Direct damage due to flooding or blockage by water-borne debris.	The Proposed Development will be designed accounting for increased winter precipitation. Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b] includes a number of adaptation measures that would be considered in the detailed design and operations management.	Medium Mean precipitation rates in the region are projected to change, increasing by 19% in winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080.	Low Access routes may become flooded or blocked during heavy rainfall events and cause difficulties carrying out repair and maintenance activities for up to several days. This would result in an unplanned partial interruption to operation and possible safety risks. The assessment has sought to take a conservative	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
						approach given future climate uncertainty; this consequence is considered to be low.			
40	Access routes	Drought	Potential direct damage caused by land subsidence due to drought.	The design of the Proposed Development and the material specifications for its access routes will take into account increased frequency of heatwaves and decreases in average summer precipitation. They will also account for increased occurrence of dry ground conditions under projected future climate conditions.	Low While drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath the Proposed Development typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Proposed Development is in an area where potential change in subsidence due to climate change is unlikely.	Low Drought is unlikely to cause damage to access routes. However, were physical damage to access routes caused by land subsidence to occur, this would result in restricted access to the Proposed Development and difficulties carrying out repair and maintenance activities. This would result in an unplanned partial interruption to operation and possible safety risks. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be low.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
41	Substations (including transformers and switchgears)	Extreme heat	Extreme temperatures may cause overheating and insulation failure in substation switchgears. High temperatures could decrease the lifetime of transformers and other substation components.	The design of the substations and the material specifications for its key components will include increases in mean summer and winter temperatures and increased frequency of heatwaves. It has been noted that average daily maximum summer temperatures are projected to increase beyond the regional heatwave definition threshold of 25°C, occurring approximately 5-times more frequently than the current baseline.	Low Mean daily summer temperatures are expected to increase by 4.3°C (from 15.8°C to 20.1°C) in the period between 2050 and 2080. Number of hot days (daily maximum temperature higher than 25°C) projected to increase from baseline 10.4 days per year to 55.6 days per year in the period between 2050 and 2080. It is assumed that the projected changes in climate parameters will not exceed the safe operational thresholds of substations and substation equipment as these are designed to be weather resilient.	Medium Extreme heat might lead to overheating of electrical equipment and insulation failure. This could lead to large safety risks and incur large financial cost due to loss of generated electricity to the grid. It also has a potential to result in unplanned total interruption to operation. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.	Minor (NS)	Not Significant	None proposed.
42	Substations (including transformers and switchgears)	Storms and high winds	Direct damage due to high winds and storm conditions. High wind penetration could also result in transformer instability and voltage fluctuations due to reverse power flow of transformers. Lightning may cause damage or malfunction.	Design takes into account potential falling trees and will be designed with stronger winds accounted for. Appropriate lightning protection will be constructed. Fencing is anticipated to reduce the likelihood of falling debris damaging the substation.	Low There are no compelling trends in changes to storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. From 2050 onwards, increase in the frequency and intensity of winter	Medium Storms and high winds may cause physical damage to substation components. High wind penetration may cause transformer instability and voltage fluctuations. This could lead to large safety risks and incur large financial cost due to	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
					storms is expected over the UK. It is assumed that the projected changes in climate parameters will not exceed the safe operational thresholds of substations and substation equipment as these are designed to be weather resilient.	loss of generated electricity to the grid. It also has a potential to result in unplanned total interruption to operation. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.			
43	Substations (including transformers and switchgears)	Heavy precipitation and flooding	Heavy precipitation can cause flooding in low lying areas, damaging ground level substations, transformers, switchgears, and control equipment. Water inundation can damage substation equipment and cause faster ageing of electric poles.	The substations will be designed with increased winter precipitation accounted for. Substations located within low-lying land will be designed with mitigation to ensure resilience to flood events. Appendix 15.1: Flood Risk Assessment (ES Volume 3) [EN0110012/APP/L VS/ 06.03.15.01b] includes a number of adaptation measures that would be considered in the detailed design and operations management.	Low Mean precipitation rates in the region are projected to change, increasing by 19% in the winter and decreasing by 24% in summer in the period between 2050 and 2080. Number of days with heavy rainfall (>20 mm) is set to increase from 2.3 days to 2.8 days between 2050 and 2080. It is assumed that the projected changes in climate parameters will not exceed the safe operational thresholds of substations and substation equipment as these are designed to be weather resilient.	Medium Heavy precipitation and flooding may cause physical damage to critical substation equipment and lead to faster aging of critical assets. This could lead to large safety risks and incur large financial cost due to loss of generated electricity to the grid. It also has a potential to result in unplanned total interruption to operation. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
44	Substations (including transformers and switchgears)	Drought	Potential direct damage caused by land subsidence due to drought.	Design of substation foundations will take into account increased occurrence of dry ground conditions under projected future climate conditions.	Negligible While drought events are projected to become more frequent under future climate, the risk of land subsidence is considered low as the ground conditions beneath the Proposed Development typically have a negligible to low geohazard risk, with a low risk for shrink-swell potential of shallow clays. The BGS GeoClimate shrink-swell national dataset (Ref 1) indicates the Proposed Development is in an area where potential change in subsidence due to climate change is unlikely.	Medium Drought is unlikely to cause land subsidence. However were physical damage to substations caused by drought to occur, this would lead to large safety risks and incur large financial cost due to loss of generated electricity to the grid. It also has a potential to result in unplanned total interruption to operation. The assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.	Negligible (NS)	Not Significant	None proposed.
45	All receptors	Wildfires	Damage/harm from wildfires.	The design will include the use of firebreaks to provide buffers between vegetation to stop widespread fires.	Low The combination of increases in projected temperature and decreases in summer precipitation could increase the risk of wildfires in the area.	Medium Wildfires could lead to very large safety risks and financial losses. They could cause unplanned total interruption to operation that is difficult to remedy. This risk will be mitigated through appropriate fire safety measures and through the (oBFSMP) [EN0110012/APP/L VS/07.06]. The	Minor (NS)	Not Significant	None proposed.

ID	Receptor	Hazard	Risk	Embedded Mitigation	Likelihood Score	Consequence Score	Overall Score	Significance	Additional Mitigation
						assessment has sought to take a conservative approach given future climate uncertainty; this consequence is considered to be medium.			

References

- Ref 1 British Geological Survey (2025) GeoClimate UKCP09 and UKCP18: Shrink–swell national datasets. Available at: [GeoClimate UKCP09 and UKCP18 - British Geological Survey](#)
- Ref 2 Jerez, S., Tobin, I., Vautard, R. et al. (2015) The impact of climate change on photovoltaic power generation in Europe. Nat Commun 6, 10014 [Online] Available at: 
- Ref 3 Shaik, F., Lingala, S.S. & Veeraboina, P. (2023) Effect of various parameters on the performance of solar PV power plant: a review and the experimental study. Sustainable Energy res. 10, 6. [Online] Available at: 



Light Valley
Solar

W: Lightvalleysolar.co.uk
E: info@lightvalleysolar.co.uk