One Earth Solar Farm

Volume 6.0: Environmental Statement [EN010159]

Volume 2: Aspect Chapters

Chapter 7: Hydrology and Hydrogeology

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Glossary

Term	Definition
Design Flood Event	A flood event of a given annual flood probability, which is defined as the 1 in 100 year river or surface water flood (1 in 200 year event when tidal flooding is concerned), plus an appropriate allowance for climate change. This flood event is used to inform the level of mitigation for proposed development.
Greenfield Runoff Rate	Peak rate of runoff for a specific return period due to rainfall falling on a given area of vegetated land.
Main River	Usually larger rivers and streams, designated as such by the Environment Agency. The Environment Agency is responsible for maintenance, improvement and/or construction work on main rivers to manage flood risk.
Ordinary Watercourse	Any watercourse that is not defined as a Main River. Works proposed within or near Ordinary Watercourses require consent from the Lead Local Flood Authority or Internal Drainage Board.
Return Period	An average time or an estimated average time between events.

List of Abbreviations and Acronyms

Term	Definition
BESS	Battery Energy Storage System
BGS	British Geological Survey
CIRIA	Construction Industry Research and Information Association
CEMP	Construction Environmental Management Plan
CIWEM	Chartered Institution of Water and Environmental Management
DCO	Development Consent Order
DEFRA	Department of the Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
FRAP	Flood Risk Activity Permit
FRA	Flood Risk Assessment
IDB	Internal Drainage Board
LiDAR	Light Detection and Ranging (an aerial flown survey of the ground)
LLFA	Lead Local Flood Authority
Magic	Multi-Agency Geographic Information Centre
NPPF	National Planning Policy Framework
NPS	National Policy Statement
oCEMP	Outline Construction Environmental Management Plan
oDEMP	Outline Decommissioning Environmental Management Plan
PPG	Planning Practice Guidance
SFRA	Strategic Flood Risk Assessment
SoP	Standard of Protection

Term	Definition
SPZs	Source Protection Zones
SuDS	Sustainable Drainage Systems
WFD	Water Framework Directive
WMP	Water Management Plan
WRA	Water Resource Assessment

7. Hydrology and Hydrogeology

7.1.1 This Chapter of the Environmental Statement (ES) has been prepared by Logika and presents an assessment of the likely significant environmental effects of the Proposed Development upon Hydrology and Hydrogeology.

7.1.2 A description of the methods used in the assessment is set out in this Chapter. This is followed by a description of the relevant baseline conditions, future baseline conditions and sensitive receptors, together with an assessment of the likely significant effects of the Proposed Development during construction, operation and maintenance and during decommissioning. Consideration of the likely significant environmental effects has been undertaken throughout the design of the Proposed Development. Specific environmental measures relevant to Hydrology and Hydrogeology have been identified and have been considered as part of the assessment. To conclude, a summary of the assessment is presented along with the next steps, where applicable. Details of the cumulative effects assessment is presented separately within **ES Volume 2, Chapter 18: Cumulative Effects [EN010159/APP/6.18].**

7.1.3 This Chapter is supported by the following figures located within **ES Volume 3: Figures Supporting Volumes 1 and 2 [EN010159/APP/6.20]** and further detailed information contained within the following appendices located within **Volume 3: Technical Appendices Supporting ES Volumes 1 and 2 [EN010159/APP/6.21]**:

- **ES Volume 3: Figures Supporting Volumes 1 and 2 [EN010159/APP/6.20]**
  - **Figure 7.1**: Study Area
  - **Figure 7.2:** Existing Watercourses
  - **Figure 7.3:** Flood Map for Planning
  - **Figure 7.4:** Existing Flood Defences
  - **Figure 7.5:** Flood Map for Planning River and Sea With Defences – Present Day 1 in 100 year (rivers) and 1 in 200 year (sea) extents
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- **Figure 7.15:** 1 in 100 Year Plus 39% Climate Change Flood Extent (Design Flood Event)
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- ~~**Figure 7.17:** Flood Depths Exceeding 1.5 m (Design Flood Event)~~
- **Figure 7.178:** Summary of Freeboard Allowance for the Design Fluvial Event ~~and Panel Flood Depths~~

> **ES Volume 3: Technical Appendices Supporting ES Volumes 1 and 2 [EN010159/APP/6.21]**

- **Appendix 7.1:** Summary of Legislation and Technical Guidance
- **Appendix 7.2:** Flood Risk Assessment (FRA) and Outline Drainage Strategy
- **Appendix 7.3:** Full Details of Consultation Comments – Meeting Minutes
- **Appendix 7.4:** Stage 1 Water Framework Directive Screening Assessment

7.2 Relevant Legislation, Policy and Technical Guidance

7.2.1 Legislation, planning policy and guidance relating to hydrology and hydrogeology, and relevant to the Proposed Development comprises the following, further details are included in **ES Volume 3, Appendix 7.1: Summary of Legislation and Technical Guidance [EN010159/APP/6.21]**:

> Legislation

- The Water Environment (Water Framework Directive (WFD)) (England and Wales) Regulations (2017).
- Flood and Water Management Act (2010).
- Environmental Protection Act (1990).
- Water Resources Act (1991) as amended 2009.
- Land Drainage Act (1991).

- Environment Act (1995).
- Environment Act (2021).
- Water Act (2014).

> National Planning Policy

- Overarching National Policy Statement for Energy (EN-1) (2023) – specific reference to Part 5, Section 5.8, which relates to Flood Risk.
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (2023) - specifically paragraphs 2.10.84 – 2.10.88.
- National Planning Policy Framework (2024) specific reference to Section 14.

> Local Planning Policy

- Newark & Sherwood District Council, Amended Core Strategy Development Plan (2019). Core Policy 9 and Core Policy 10.
- Newark & Sherwood District Council, Allocations and Development Management Development Plan Document (DPD) (2013).
- Central Lincolnshire Local Plan (2023). Policies S20 and S21.
- Bassetlaw Local Plan 2020-2038 (Adopted May 2024). Policy ST50 and ST51.

> National Guidance

- Planning Practice Guidance (2023). Flood Risk and Coastal Change Planning Practice Guidance (PPG) (updated 2022).
- DEFRA Non-statutory technical standards for sustainable drainage systems (2015).
- Construction Industry Research and Information Association (CIRIA) Report C753 The SuDS Manual (2015)

> Local Guidance

- Bassetlaw District Level 1 Strategic Flood Risk Assessment (SFRA) (2019).
- Newark and Sherwood District Level 1 SFRA (2016).
- West Lindsey Level 1 SFRA (2009).
- Lincolnshire Sustainable Drainage Design and Evaluation Guide (2018).

7.3 Assessment Methodology and Significance Criteria

The Study Area

7.3.1 Given the nature of hydrology and hydrogeology, it is difficult to accurately define a study area as water is a flowing element. Therefore, in the absence of any specific guidance relating to solar developments and in accordance with Design Manual for Roads and Bridges (DMRB) LA 113 (2020), a 1 km buffer has been considered appropriate, as sufficient distance is provided to encompass catchments associated with the Order Limits and to enable the deposition of silts in overland flows and dilution of any concentrated pollutants. Any impacts to waterbodies beyond 1 km from the Site are considered to be negligible. The study area is shown in **ES Volume 3, Figure 7.1: Study Area [EN010159/APP/6.20]**.

Establishing the Baseline

Existing Baseline

7.3.2 The existing baseline conditions of the Order Limits have been determined using the following sources:

- Environment Agency (EA) Flood Map for Planning[1,2];
- EA Risk of Flooding from Surface Water mapping (2025)[3];
- Risk of Flooding from Surface Water mapping (2024)[4];
- EA Historic flooding maps[5];
- EA Reservoir breach mapping;

[1] Environment Agency, Flood Map for Planning (Rivers and Sea) - Flood Zone 2, Accessed 10 February 2025.

[2] Environment Agency, Flood Map for Planning (Rivers and Sea) - Flood Zone 3, Accessed 10 February 2025.

[3] Environment Agency, Risk of Flooding from Surface Water, Accessed 10 February 2025.

[4] Environment Agency, Risk of Flooding from Surface Water 3.3% Extent, 1% Extent, 0.1% Extent, Accessed 10 February 2025.

[5] Environment Agency, Historic Flood Map, Accessed 10 February 2025.

- Mapping included within the Bassetlaw District[6], Newark and Sherwood[7], and West Lindsey[8] SFRAs;
- British Geological Survey (BGS) geology map[9] and borehole record[10];
- DEFRA LiDAR Survey Database[11];
- Site walkovers;
- Hydraulic Modelling of the River Trent provided by the EA (Tidal Trent 2023);
- Environment Agency Asset Information[12];
- Environment Agency Drinking Water Protected Areas Dataset[13]; and
- Environment Agency Drinking Water Safeguard Zones Datasets[14,15].

Future Baseline

7.3.3 The future baseline conditions of the Order Limits and wider study area have been determined using the following sources:

- EA guidance on climate change for peak river flows and rainfall[16];
  - 40% increase in rainfall intensity[17] when assessing surface water flood risk and drainage systems.

[6] Bassetlaw District Council, Strategic Flood Risk Assessment, January 2019. Accessed 05 February 2025.

[7] Newark and Sherwood District Council, Strategic Flood Risk Assessment, December 2016, Accessed 05 February 2025.

[8] West Lindsey District Council, Strategic Flood Risk Assessment, July 2009. Accessed 05 February 2025.

[9] British Geological Survey, Geology Viewer. Accessed 10 February 2025.

[10] British Geological Survey, GeoIndex Onshore. Accessed 10 February 2025.

[11] Environment Agency, LIDAR Composite Digital Terrain Model (DTM) - 1 m, 2022. Accessed 12 December 2024.

[12] Environment Agency, Asset Management Dataset. Accessed 11 February 2025.

[13] Environment Agency, Drinking Water Protected Areas (Surface Water). Accessed 20 August 2025.

[14] Environment Agency, Drinking Water Safeguard Zones (Surface Water). Accessed 20 August 2025.

[15] Environment Agency, Drinking Water Safeguard Zones (Groundwater). Accessed 20 August 2025.

[16] Environment Agency, Flood risk assessments: climate change allowances, May 2022. Accessed 06 February 2025.

[17] Environment Agency, Climate Change Allowances Peak Rainfall Intensity Mapping. Accessed 06 February 2025.

- 39% increase in peak river flows[18] when assessing fluvial flood risk (i.e. the Design Climate Change Allowance).
- 62% increase in peak river flows when assessing fluvial flood risk to represent the maximum credible climate change scenario (as a sensitivity test).

> Hydraulic Modelling of the River Trent provided by the EA (Tidal Trent 2023).

Identifying Receptors and Receptor Sensitivity

7.3.4 Receptor sensitivity classifications have been determined based on professional experience and are summarised below:

> High - High importance and rarity, national scale, and limited potential for substitution.

> Medium - Medium or high importance and rarity, regional scale, limited potential for substitution.

> Low - Low or medium importance and rarity, local scale.

> Negligible - Very low importance and rarity, local scale.

Assessment Methodology

7.3.5 There is no specific quantitative methodology that allows the hydrological effects to be assessed, however the assessment is based on technical review of **ES Volume 3, Appendix 7.2: Flood Risk Assessment (FRA) and Outline Drainage Strategy [EN010159/APP/6.21]**. The FRA and Drainage Strategy and this Chapter have been informed by a desk based study to identify the existing hydrological features and water environment to inform the existing baseline and assess any potential effects caused by the Proposed Development during the construction, operation and decommissioning. The FRA and Drainage Strategy also includes quantitative assessments where appropriate (i.e. in assessing flood risk mitigation and the drainage strategy).

7.3.6 With this in mind, determining the effects of the construction, operation and decommissioning of the Proposed Development is generally based on professional judgement and is qualitative. The experience of the consultants that have prepared and reviewed this chapter, who are competent experts for the purpose of the EIA Regulations (chartered with the Chartered Institution of Water and Environmental Management (CIWEM)), is set out in **ES Volume 1, Chapter 1: Introduction [EN010159/APP/6.1]**.

Construction

[18] Environment Agency, Climate Change Allowances Peak River Flow Mapping. Accessed 06 February 2025.

7.3.7 The likely construction effects are based upon an understanding of the construction works as is set out in **ES Volume 1, Chapter 5: Description of the Proposed Development [EN010159/APP/6.5]**. A qualitative assessment of likely significant effects has been carried out.

Operational and Maintenance

7.3.8 The assessment of the Operational Development is based upon the Proposed Development, as set out in **ES Volume 1, Chapter 5: Description of the Proposed Development [EN010159/APP/6.5]**.

7.3.9 As set out in **ES Volume 3, Appendix 7.2: Flood Risk Assessment (FRA) and Outline Drainage Strategy [EN010159/APP/6.21]**, a number of environmental measures have been agreed in principle with the EA and LLFA(s) and have been incorporated within the design to ensure the Proposed Development will result in no increase in flood risk outside of the Order Limits. A qualitative assessment of likely significant effects has been carried out and the environmental measures have been considered when determining the effects.

Decommissioning

7.3.10 The likely decommissioning effects are based upon an understanding of the decommissioning works, as set out in **ES Volume 1, Chapter 5: Description of the Proposed Development [EN010159/APP/6.5]**. A qualitative assessment of likely significant effects has been carried out.

Significance Criteria

Magnitude of Impact

7.3.11 The magnitude of impact takes into account the timing, scale, size, and duration of the impact. For the purposes of this assessment, the magnitude criteria have been defined based on our professional experience and are summarised in Table 7.1 below.

Table 7.1 Magnitude of Impact Descriptors

Magnitude of impact	Criteria guide
High	Large scale change in quality and integrity of resource; severe change to key characteristics, features or elements of long term duration (i.e. approximately 50 years)
Medium	Medium scale change in quality and integrity of resource; measurable change to key characteristics, features or elements of medium term duration (i.e. approximately 20 years)

Magnitude of impact	Criteria guide
Low	Some measurable change in attributes, quality, or vulnerability; minor alteration to one or more key characteristics, features or elements. (i.e. approximately 5 years)
Negligible	Minor changes to one or more characteristic, feature or element (i.e. less than 1 year)
No Change	No loss or alteration of characteristics, features or elements; no observable impact in either direction

Defining the Effect

7.3.12 Nature of effect is a judgement about the combination of the magnitude of effect and the sensitivity of the receiving receptor. The categories used when classifying overall significance are indicated in Table 7.2.

Table 7.2 Nature of Effect Criteria

		Receptor Sensitivity			
		High	**Medium**	**Low**	**Negligible**
Impact Magnitude	**High**	**Major**	**Major**	**Moderate**	Minor
	Medium	**Major**	**Moderate**	Minor	Minor
	Low	**Moderate**	Minor	Minor	Minor
	Negligible	Minor	Minor	Minor	Minor
	No Change	Neutral	Neutral	Neutral	Neutral

7.3.13 The overall significance of the effects is determined using professional judgement, giving consideration to various factors including the sensitivity of the receptors and magnitude of the predicted impacts. A significant effect would be Major or Moderate (in bold in the Table 7.2) and in each case, the reason for the judgement reached is stated within the main assessment text. The likely significance of identified effects is defined as follows:

- **Not significant:** No significant adverse of beneficial effect to an environmental resource or receptor.
- **Significant beneficial:** Advantageous or positive effect to an environmental resource or receptor.
- **Significant adverse:** Detrimental or negative effect to an environmental resource or receptor.

Consultation

7.3.14 As set out in **ES Volume 1, Chapter 2: EIA Methodology [EN010159/APP/6.2]**, a number of consultation activities have been undertaken. **ES Volume 3, Appendix 2.2: ES Response to PINs Scoping Opinion [EN010159/APP/6.21]** summarises the EIA Scoping Opinion for the Proposed Development and where elements have been agreed to be scoped out of the EIA.

7.3.15 Any consultation elements which have been raised and addressed post-scoping, are detailed within **Consultation Report [EN010159/APP/5.1]**.

7.3.16 Those key issues raised and discussed in respect of Hydrology and Hydrogeology, beyond those detailed within the Scoping Opinion, and which have been considered within the assessment, are set out in Table 7.3.

Table 7.3 Summary of Key Engagement with Statutory Bodies

Consultee	Issue Raised	How Addressed	Where Addressed within the ES (where relevant)
Environment Agency	Provision of mitigation to address fluvial flooding Consideration of flood impacts as a result of a breach (failure) of the defences Flood modelling approaches	Freeboard requirements for modules above design flood level. Appropriate breach (failure) locations and alternative quantified approaches agreed with EA. Sensitive equipment (BESS and Substations) largely located away from the breach extents and agreed with the EA. Agreements on quantification techniques to confirm the impact of the development on floodplain storage and approach to fluvial vs pluvial comparisons.	Section 7.5
Lead Local Flood Authority (Nottinghamshire County Council and Lincolnshire County Council)	Approach to Surface Water Drainage Strategy	Surface water runoff from module areas to drain naturally to ground but SuDS features to be provided where feasible to encourage infiltration and provide multi-functional benefits. Surface Water runoff from significant areas of hardstanding (BESS and sub-stations) to discharge at greenfield rates through the use of SuDS attenuation. All features to be lined to prevent discharge of contaminants to ground.	Section 7.5

Consultee	Issue Raised	How Addressed	Where Addressed within the ES (where relevant)
Severn Trent Water	Foul Water	In line with the scoping opinion, the potential impacts of the disposal of foul drainage have been scoped out on the basis that there will be no direct connection to existing foul infrastructure. Foul water will not be treated on site or discharged to any environmental receptor (i.e. ground or watercourse). During construction and decommissioning, it is proposed that portacabin toilets will be provided and waste removal would be the responsibility of the contracting company. During operation, cess pits (or similar foul/wastewater storage tanks) will be provided and waste water would be tankered away at intervals which will be confirmed at detailed design. Severn Trent Water have been consulted and have confirmed in principle that they would accept tankered flows from the Proposed Development, subject to confirmation of volumes and intervals of tankering at detailed design.	N/A

Assumptions, Exclusions and Limitations

7.3.17 The following assumptions have been applied:

- Floods are natural occurrences and the risk they pose are wide ranging. With regards to flood specifically, this study is primarily concerned with the risk to people and property from nearby fluvial watercourses, as well as flooding from other sources including surface water (pluvial) flooding, groundwater flooding, foul water and flooding from artificial sources.

- Hydraulic models are a simplified representation of reality and are based on a series of estimates and assumptions. Hydraulic modelling results supplied by the EA have been used to inform the FRA. These models will have been developed in accordance with EA guidelines for hydraulic modelling.
- Existing runoff has been calculated as part of the Site-specific FRA. This approach gives conservative estimates of current runoff, and provides an appropriate level of information for assessment of the Proposed Development for the purposes of EIA.
- The assessment of flood risk and design of surface water attenuation has been undertaken using the design fluvial and/or pluvial flood events (the 1 in 100 year plus climate change event). Climate change allowances have been applied over the design lifetime of the Proposed Development.

7.3.18 Construction activity is anticipated to commence in 2027 and will continue for a period of 2 years (24 months). The Proposed Development would be operational by 2030. At this stage phasing of works in unknown until a construction contractor has been appointed. The assessment assumes the maximum effect scenario of construction works happening across the whole Order Limits simultaneously for the full construction period, although this is unlikely.

7.3.19 For the purposes of assessment, the operational scenario has considered the impact throughout the 60 year lifespan of the Proposed Development.

7.3.20 Exclusions:

- Due to the nature of the Proposed Development, it is not considered likely that any issues to the watercourses will be present, as these will be dealt with through the inclusion of environmental measures (see Section 7.5) and protective provisions. **ES Volume 3, Appendix 7.4: Stage 1 Water Framework Directive Screening Assessment [EN010159/APP/6.21]** has been undertaken to consider the anticipated works to the watercourses and the mitigation during both construction and operation stages and has confirmed no impact.

7.4 Baseline Conditions

7.4.1 The following figures are provided in support of the baseline section of the Hydrology and Hydrogeology Chapter, with further details provided on the baseline conditions in the following sections:

- **Figure 7.2:** Existing Watercourses
- **Figure 7.3:** Flood Map for Planning
- **Figure 7.4:** Existing Flood Defences
- **Figure 7.5**: Flood Map for Planning River and Sea With Defences – Present Day 1 in 100 year (rivers) and 1 in 200 year (sea) extents

- **Figure 7.6:** Functional Flood Plain (Flood Zone 3b)
- **Figure 7.7:** Flood Extent from Breach Location 36 (Present Day)
- **Figure 7.8:** Environment Agency Historic Flood Map and Drone Survey Flood Event
- **Figure 7.9:** Environment Agency Risk of Flooding from Surface Water (2025)
- **Figure 7.10:** Environment Agency Risk of Flooding from Surface Water with Climate Change (2025)
- **Figure 7.11:** Environment Agency 0.3 m Surface Water plus Climate Change Flood Depths (2025)
- **Figure 7.12:** Environment Agency Risk of Flooding from Surface Water (2024)
- **Figure 7.13:** Environment Agency Surface Water Low Risk Flood Depths (2024)
- **Figure 7.14:** Environment Agency Flood Risk from Reservoirs
- **Figure 7.15:** 1 in 100 Year Plus 39% Climate Change Flood Extent (Design Flood Event)
- **Figure 7.16:** 1 in 100 Year Plus 62% Climate Change Flood Extent (Maximum Credible Flood Event)

Current Baseline Conditions

Existing Watercourses, Defences and Drainage Arrangement

7.4.2 As shown in **ES Volume 3, Figure 7.2: Existing Watercourses [EN010159/APP/6.20]**, the River Trent flows through the centre of the Order Limits. The River Trent is classified as a Main River by the EA and although there are tidal influences associated with the watercourse (tidal boundary located at Newark-on-Trent), it is considered to be fluvially dominated within the Order Limits, i.e. water levels are generally dictated by rainfall within the river catchment rather than tidal fluctuations. The outputs of the River Trent model which have been used to form the basis of the assessment of fluvial flood risk include tidal fluctuations (extreme water level profiles) at the model's downstream boundary.

7.4.3 In addition to the River Trent, there are a number of ordinary watercourses located within the Order Limits, including the Fledborough Beck, an Unnamed Ordinary Watercourse in the southwest of the Order Limits, and the Unnamed Eastern Ordinary Watercourse, as illustrated in **ES Volume 3, Figure 7.2: Existing Watercourses [EN010159/APP/6.20]])**.

7.4.4 The Laneham Beck (EA Main River) is not located within the Order Limits but is located within the study area, approximately 450 m to the north west of the Order

Limits. The Laneham Beck flows away from the Order Limits and forms a tributary to the River Trent.

7.4.5 A summary of the relevant watercourses is provided in Table 7.4 below.

Table 7.4 Surrounding Watercourses Summary

Watercourse	Description
River Trent	A main river which flows in a northerly direction through the centre of the Order Limits.
Laneham Beck	A main river which flows in a northeastern direction to the northwest of the Order Limits. Forms a tributary to the River Trent.
Fledborough Beck	An ordinary watercourse which flows west to east through the central areas of the western parcel of the Order Limits, before ultimately discharging to the River Trent.
Unnamed Ordinary Watercourse	An unnamed ordinary watercourse which flows west to east through the southern area of the western parcel of the Order Limits. This ordinary watercourse ultimately discharges to the River Trent.
Unnamed Eastern Ordinary Watercourse	An unnamed ordinary watercourse which flows in a northerly direction through the eastern area of the Order Limits. This ordinary watercourse is a tributary of the Foss Dyke which ultimately connects to the River Trent approximately 4 km north of the Order Limits.
Various	A number of field drains and ditches within the Order Limits itself which are ultimately in connectivity with either the ordinary watercourses noted above or the River Trent.

7.4.6 There are a number of formal flood defences associated with the River Trent, as shown within the EA asset management records. These defences are predominantly in the form of raised embankments and are shown broadly to be in a fair to good condition, as classified by the EA. The only exception to this, is the Fledborough Embankment which is shown to have a poor condition, however, no details have been provided by the EA to confirm the reasoning behind this classification.

7.4.7 The Standard of Protection (SoP) of the flood defences is illustrated in **ES Volume 3, Figure 7.2: Existing Watercourses [EN010159/APP/6.20]** and varies from 1 in 5 years through to 1 in 100 years. It is worth noting that the defences in the northern areas of the western bank of the River Trent tend to provide a higher SoP (1 in 100 year) with the remaining defences providing a 1 in 5 year SoP (note this includes the Fledborough Embankment noted above, which is shown to have a poor condition rating).

7.4.8 To ensure that impacts on the existing defences are minimised and that access is not restricted, significant offsets (minimum of 16 m) are provided between the defences and the built development that occurs. It is understood that the defences are inspected regularly by the EA.

7.4.9 The vast majority of the land within the Order Limits is greenfield in nature (this includes the agricultural uses) and therefore is not anticipated to have any substantial piped surface water drainage networks in place. It is anticipated that rainfall falling on the Order Limits simply infiltrates to the ground with any additional runoff being directed to the existing network of ordinary watercourses and field drains, which ultimately discharge to the River Trent.

Ground Conditions

7.4.10 **ES Volume 2, Chapter 8: Land and Soils [EN010159/APP/6.8]** indicates the following with regards to the underlying geology at the Order Limits:

- Superficial geology is present across much of the Order Limits, although there are areas with no mapped deposits, predominantly in the western part of the Order Limits, and more restricted areas to the east of the River Trent.
- Superficial deposits of Holme Pierrepoint Sand and Gravel member are present around Low Marnham, from Fledborough to Dunham on Trent, in bands to the west and east of the River Trent, and in a more widespread distribution further east.
- Alluvium is present along the route of the River Trent and in more limited extents along more minor watercourses throughout the Order Limits and wider study area. An area of Devensian Till (mainly clay) is shown in the north west of the Order Limits, between Ragnall and Darlton. To the east of the River Trent, there are some deposits of Blown Sand.
- Bedrock geology is dominated by mudstone from the Mercia Mudstone Group. This comprises mainly red mudstone with some layers of siltstones or halite-bearing units. Thin sandstone beds may be present. A small section of the Order Limits at the far eastern extent is underlain by mudstones from the Penarth Group. These are grey to black mudstones with occasional limestone or sandstone layers.

Hydrogeology

7.4.11 **ES Volume 2, Chapter 8: Land and Soils [EN010159/APP/6.8]** indicates the following with regards to the underlying aquifers, groundwater source protection zones (SPZs), and groundwater abstraction:

- The Mercia Mudstone Group bedrock units are classified as a secondary B aquifer, with the Penarth Group classified as a secondary undifferentiated aquifer. Where superficial units are present within the Order Limits, these are categorised as secondary A aquifers. There is a small area of secondary undifferentiated aquifer where till deposits are present between Ragnall and Darlton, within the Order Limits.

- There are no groundwater SPZs within the study area. It should be noted that groundwater SPZs were identified within the PEIR (associated with Anglian Water groundwater abstractions). However, the Order Limits have since been altered and the groundwater SPZs detailed in the PEIR are no longer within the Order Limits. As a result, neither of the groundwater abstraction points identified by Anglian Water as being in the vicinity of the Proposed Development are now within the Order Limits, or the study area (as demonstrated on **Figure 8.7** (**ES Volume 3: Figures Supporting Volumes 1 and 2 [EN010159/APP/6.20]**)).

- ~~There are no groundwater SPZs within the majority of the study area. Three groundwater SPZs are present within a very localised area to the north of the Order Limits within the study area, near Dunham Bridge. The SPZs range from Zone 1 Inner Protection Zones to Zone 2 Subsurface Activity, but are all thought to be associated with Anglian Water groundwater abstractions.~~

- There are no active licensed groundwater abstraction points within the Order Limits. There are two groundwater abstraction points located outside the Order Limits but within 250m of the boundary (see the PRA provided as **ES Volume 3, Appendix 8.2: Preliminary Risk Assessment [EN010159/APP/6.21]** for further details). In addition to this there are three groundwater abstraction points licensed to Anglian Water, for which grid references are not provided within the Environment Agency dataset. These are assumed to be located outside the Order Limits, but within the study area (based on the earlier dataset provided within the Envirocheck report). The off-site abstraction points that are within the study area, but outside the Order Limits, are either for general agricultural use, or are licensed to Anglian Water (with no 'purpose' provided in the Environment Agency dataset). It is noted that these Anglian Water abstraction points are distinct from the groundwater SPZs discussed in Section 8.4.37.

- ~~There is one additional groundwater abstraction point located within the Order Limits (which is indicated to be 'active' by the Environmental Database report), with a further four being located within the study area, but outside the Order Limits. The abstraction location within the Order Limits is located at High Marnham Power Station, for industrial processing. As High Marnham Power Station is no longer present, it is possible that this abstraction point is no longer in use, but the licence remains active. The abstraction points that are within the study area, but outside the Order Limits, are all for general farming (spray irrigation). One of these, located near Ragnall, is listed as being using as a domestic supply, in addition to the general farming use.~~

7.4.12 BGS groundwater vulnerability mapping illustrated on Magic Map indicates the following:

- The bedrock geology is predominantly shown to have a high groundwater vulnerability classification meaning these are high priority groundwater resources that have very limited natural protection. This results in a high overall pollution risk to groundwater from surface activities. Operations or activities in these areas are likely to require additional measures over and above good practice pollution prevention requirements to ensure that groundwater isn't impacted.
- There are localised areas within the Order Limits where a medium groundwater vulnerability classification is noted. This indicates that these are medium priority groundwater resources that have some natural protection resulting in a moderate overall groundwater risk. Activities in these areas should as a minimum follow good practice to ensure that they do not cause groundwater pollution.
- The superficial deposits have a medium-high groundwater vulnerability classification indicating these are high priority groundwater resources that have limited natural protection. This results in a medium-high overall pollution risk to groundwater for surface activities. Activities in these areas may require additional measures over and above good practice to ensure that they do not cause groundwater pollution.

Fluvial and Tidal Flood Risk

7.4.13 According to **ES Volume 3, Figure 7.3: Flood Map for Planning [EN010159/APP/6.20]**, large areas of the Order Limits are shown to be within Flood Zones 2 and 3, indicating a medium to high probability of flooding from rivers and the sea. This flooding is considered to originate and be predominantly associated with the River Trent, which flows through the centre of the Order Limits. However, as set out previously, there are a number of ordinary watercourses within the Order Limits which are hydraulically connected to the River Trent. Based on an assessment of the hydraulic modelling for the River Trent, it is confirmed that flooding at the Order Limits is fluvially dominated rather than occurring from tidal sources.

7.4.14 **ES Volume 3, Figure 7.3: Flood Map for Planning [EN010159/APP/6.20]** shows the presence of flood defences, both on the banks of River Trent and set back from its main channel. The Standard of Protection (SoP) that these defences provide varies along length of the watercourse. A number of areas within the Order Limits therefore benefit from these defences. Please refer to **ES Volume 3, Figure 7.4: Existing Flood Defences [EN010159/APP/6.20]** for further clarity on the SoP for the existing defences.

7.4.15 The updated Flood Map for Planning includes a 'river and sea with defences' dataset, which takes into account the presence of flood defences and assumes that they operate in the way they were designed to function. The Flood Map for Planning River and Sea with Defences dataset for the present day defended 1 in 100 year (rivers) and 1 in 200 year (the sea) events (included as **ES Volume 3, Figure 7.5: Flood Map for Planning River and Sea With Defences – Present Day 1 in 100 year (rivers) and 1 in 200 year (sea) extents**

[EN010159/APP/6.20]) indicates when compared to the undefended Flood Zone 3 dataset (**ES Volume 3, Figure 7.3: Flood Map for Planning [EN010159/APP/6.20]**) that much of the site is afforded protection from the existing defences.

7.4.16 The SFRA for Bassetlaw District Council defines the functional floodplain (Flood Zone 3b) as land which would flood with a 5% chance in each year and every year (i.e. a 1 in 20 year Annual Exceedance Event). However, since the production of the SFRA, guidance (set out by the EA) for the assessment of the function floodplain has changed. Therefore, to ensure that the assessment is in line with the EA's current recommendations, the 1 in 30 year event has been considered to represent the functional floodplain **ES Volume 3, Figure 7.6: Functional Floodplain (Flood Zone 3b) [EN010159/APP/6.20]**

7.4.17 The EA have modelled a residual event that considers the extent of flooding should there be a breach (failure) of the river defences. A number of breach locations and scenarios are included in the EA modelling, location 36 has the largest extent within the Order Limits. The present day flood extents are illustrated in **ES Volume 3, Figure 7.7: Flood Extent from Breach Location 36 (Present Day) [EN010159/APP/6.20]**. As can be seen, in the event of a breach, large areas of the Order Limits to the west could experience flooding.

7.4.18 Historic flood records provided by the EA in **ES Volume 3, Figure 7.8: Environment Agency Historic Flood Map and Drone Survey Flood Event [EN010159/APP/6.20]** indicate that there are recorded flooding events at the Order Limits. Most recently such occurred in January 2024 as a result of high water levels within the River Trent and ordinary watercourses. The extent of this flooding was captured via drone survey (commissioned privately) and is included in **ES Volume 3, Figure 7.8: Environment Agency Historic Flood Map and Drone Survey Flood Event [EN010159/APP/6.20]**. The drone survey was undertaken approximately 5 days following the onset of flooding, and may therefore not represent the maximum extent and peak flooding, but it still provides a useful insight of present day flooding that occurs.

7.4.19 The baseline risk of flooding from fluvial sources is therefore considered to be medium to high.

Pluvial Flood Risk

7.4.20 The latest EA Flood Risk from Surface Water mapping indicates the majority of the Order Limits is at a very low risk of flooding from pluvial sources **ES Volume 3, Figure 7.9: Environment Agency Risk of Flooding from Surface Water (2025) [EN010159/APP/6.20]**. There are however, localised areas within the Order Limits which are shown to be at low, medium and high risk, which are largely associated with topographic low spots.

7.4.21 The latest EA Flood Risk from Surface Water dataset also includes allowances for climate change. Climate change mapping indicates a marginal increase when

compared to the present day **ES Volume 3, Figure 7.10: Environment Agency Risk of Flooding from Surface Water with Climate Change (2025) [EN010159/APP/6.20]**.

7.4.22 Review of the latest low risk scenario depth mapping (i.e. between 1 in 100 and 1 in 1,000 year probability of occurrence) indicates that flood depths across the majority of the Order Limits is less than 300 mm **ES Volume 3, Figure 7.11: Environment Agency 0.3m Surface Water plus Climate Change Flood Depths (2025) [EN010159/APP/6.20]**.

7.4.23 The previous Risk of Flooding from Surface Water dataset indicated areas of low, medium and high risk associated with the floodplains of the Fledborough Beck in the west and unnamed Ordinary Watercourses in the southwest and east of the Order Limits **ES Volume 3, Figure 7.12: Environment Agency Risk of Flooding from Surface Water (2024) [EN010159/APP/6.20] and ES Volume 3, Figure 7.13: Environment Agency Surface Water Low Risk Flood Depths (2024) [EN010159/APP/6.20].**

7.4.24 The risk of flooding from surface water is therefore considered to be low.

7.4.25 Given the predominantly greenfield nature of the Order Limits, it is anticipated there will be limited or no substantial piped surface water drainage networks in place, although given the agricultural use there may be informal field drainage in place. The combined existing utilities plan indicates that no surface or foul sewers are located within the Proposed Development area, although a series of sewers are present in and around the villages of North and South Clifton, and beneath Church Lane which connects the two villages. The risk of flooding from sewers is therefore considered to be low.

Groundwater Flood Risk

7.4.26 Mapping from the Bassetlaw Level 1 SFRA shows that the areas of the Order Limits and study area west of the River Trent lie where there is a susceptibility to groundwater flooding ranging from greater than 75% to less than 25%. The areas of highest susceptibility are closest to the Trent's western bank, which is anticipated to be due to the permeable Alluvium superficial deposits. Available ground investigation information indicates that groundwater has been encountered locally at depths of approximately 2.0 m below ground level, however further intrusive site investigations will be undertaken as the Proposed Development works progress to confirm the true range of depth to groundwater across the Order Limits.

Flood Risk from Artificial Sources

7.4.27 The EA Flood Risk from Reservoirs mapping indicates that large areas of the Order Limits and wider study area could experience flooding from a breach of reservoirs, both when river levels are normal and when there is flooding from rivers **ES Volume 3, Figure 7.14: Environment Agency Flood Risk from**

Reservoirs [EN010159/APP/6.20]. It is worth noting however, that reservoirs are maintained to a high standard and are inspected regularly, and as such the chance of reservoir failure is considered to be extremely low.

7.4.28 There is an existing reservoir (Hall Water Reservoir) within/adjacent to the eastern area of the Order Limits. Should there be a breach of the banks of this reservoir, flows would be either be directed towards to the River Trent to the west or the Unnamed Watercourse to the east. Although the Order Limits could be impacted by these flows, this is considered to be an extremely unlikely event to occur.

7.4.29 The risk of flooding from artificial sources is therefore considered to be low.

Water Supply

7.4.30 Based on a review of the existing utilities constraints plans, there are a number of strategic distribution mains within the Order Limits and wider study area, that serve water abstraction locations and the Newton on Trent Water Treatment Works that is located off Dunham Road.

7.4.31 There are also water distribution mains serving the local communities of Dunham, Newton on Trent, Ragnall, Darlton, Fledborough, North Clifton, Thorney, High Marham and South Clifton within the Order Limits and roads that serve it.

7.4.32 Drinking Water Protected Areas (Surface Water) are defined as locations where raw water is abstracted from rivers, lakes, canals or reservoirs for human consumption. The Order Limits are partially located within the Drinking Water Protected Area (Surface Water) associated with the 'Trent from Carlton-on-Trent to Laughton Drain' waterbody. This Protected Area covers the majority of the eastern area of the Order Limits and portions of the western area. The Protected Area is classified as 'currently not at risk'.

7.4.33 Drinking Water Safeguard Zones (Surface Water) are defined as catchment areas that influence the water quality for their respective Drinking Water Protected Area (Surface Water), and are identified where the Protected Area is classified as "at risk" of failing the WFD drinking water protection objectives. The Order Limits are not located within or nearby to any Drinking Water Safeguard Zone (Surface Water).

7.4.34 Drinking Water Groundwater Safeguard Zones are established around public water supplies where additional pollution control measures are needed. The Order Limits are not located within or nearby to any Drinking Water Safeguard Zone (Groundwater).

7.4.35 As a result of the Order Limit's existing use (farmland), there is currently very little demand for potable water within the Order Limits.

Sensitive Receptors

7.4.36 The EIA Scoping Process (and subsequent consultation) and review of the preliminary environmental information (as presented in the PEIR) have identified the receptors that require assessment within this Chapter of the ES. The following receptors have therefore been identified:

- Users of both the construction site (i.e. construction workers during both construction and decommissioning) and of the completed development in relation to flood risk from all sources.
- Areas outside of the Order Limits in relation to flood risk from all sources.
- Existing watercourses within and adjacent to the study area with respect to surface water discharge rates, volume, and quality of runoff (with consideration given to their location within a Drinking Water Protected Area (Surface Water)).
- The surrounding Anglian Water and Severn Trent water mains with regard to potable water capacity/supply.

7.4.37 Although not assessed within this Chapter, groundwater abstraction points and groundwater in bedrock and superficial geology have been included as sensitive receptors and assessed within Chapter 8: Land and Soils. Refer to following within Chapter 8:

- Table 8.7 of Chapter 8 in which groundwater receptors are set out
- Sections 8.6.6 to 8.6.12 where likely significant effects to groundwater during construction are assessed.
- Sections 8.6.37 to 8.6.42 where likely significant effects to groundwater during operation are assessed.

Future Baseline Conditions

~~7.4.37~~7.4.38 It is considered that there would be very minimal changes to the Order Limits or wider study area in the future baseline scenario. The main implications would occur as a result of climate change impacts on fluvial and surface water flood extents, as well as a natural increase in the greenfield runoff rate as a result of increased rainfall intensity.

~~7.4.38~~7.4.39 For clarity, the climate change requirements to allow for increases in rainfall intensity and peak river flows are set out below:

- 40% increase in rainfall intensity when assessing surface water flood risk and drainage systems.
- 39% increase in peak river flows when assessing fluvial flood risk (climate change allowance for the design flood event).

- 62% increase in peak river flows when assessing fluvial flood risk (climate change allowance for maximum credible event).

~~7.4.39~~7.4.40 The climate change requirements noted above are both applied to the "design flood event" which is the 1 in 100 year event. The "maximum credible scenario" of 1 in 100 year plus 62% climate change is considered with regards to peak river flows, and as agreed with the EA **ES Volume 3, Appendix 7.2: Flood Risk Assessment (FRA) and Outline Drainage Strategy [EN010159/APP/6.21]** is a sensitivity test to assess how the Order Limits could be impacted in different future scenarios.

Fluvial and Tidal Flood Risk

~~7.4.40~~7.4.41 The design flood event is the event considered when determining the impact to development as well as any mitigation requirements. The flood extents and depths for the design flood event are illustrated in **ES Volume 3, Figure 7.15: 1 in 100 Year Plus 39% Climate Change Flood Extent (Design Flood Event) [EN010159/APP/6.20]**.

~~7.4.41~~7.4.42 The flood extents and depths for the maximum credible flood event are illustrated in **ES Volume 3, Figure 7.16: 1 in 100 Year Plus 62% Climate Change Flood Extent (Maximum Credible Flood Event) [EN010159/APP/6.20]**. Although this event does not dictate the design and mitigation requirements, it has been assessed as a sensitivity test, to understand how sensitive the Proposed Development is to different future scenarios.

Pluvial

~~7.4.42~~7.4.43 The 2025 Risk of Flooding from Surface Water dataset includes allowances for climate change for the 2040 to 2060 epoch. The low, medium and high risk surface water climate change flood extents are illustrated in **ES Volume 3, Figure 7.10: Environment Agency Risk of Flooding from Surface Water with Climate Change (2025) [EN010159/APP/6.20]** and have been considered when assessing the impact to the development and any mitigation requirements.

7.5 Environmental Measures

Construction

7.5.1 The Proposed Development incorporates the **Outline Construction Environmental Management Plan [EN010159/APP/7.4]** which sets out the best practice measures to be followed to minimise the environmental impacts of the construction works. A high level summary of items that are covered in the oCEMP are provided below.

- Any potential changes to the existing fluvial or surface water flow routes will be addressed within the oCEMP which will outline any temporary measures that would be put in place to control flood flows (such as preventing flows from entering open excavations). No machinery or spoil/materials would be stored within the identified flood extent, to ensure no impact to contractors, or deviation in flow routes due to the proposed works.
- Although there will be some changes to the drainage regime as a result of construction and decommissioning activities within the Order Limits (i.e. due to storage areas, facilities, and temporary changes in ground level), these will be addressed within the oCEMP. The oCEMP will outline any temporary measures that will be put in place to control surface water runoff (such as through temporary attenuation features) and reduce the risk of polluted surface water from discharging to ground or entering the ordinary watercourses within the Order Limits (such as through the use of environmental capture techniques and silt traps).
- Construction works undertaken adjacent to or within watercourses will comply with relevant guidance (e.g. CIRIA guidance and Pollution Prevention Guidance). The detailed CEMP will be supported by a Water Management Plan (WMP), that will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction.

Operational and Maintenance

7.5.2 ~~**ES Volume 3, Figure 7.17: Flood Depths Exceeding 1.5m (Design Flood Event) [EN010159/APP/6.20]** and~~ **ES Volume 3, Figure 7.1~~8~~7: Summary of Freeboard Allowance for the Design Fluvial Event ~~and Panel Flood Depths~~ [EN010159/APP/6.20]** is ~~are~~ provided in support of the Operational and Maintenance Environmental Measures section of the Hydrology and Hydrogeology Chapter, with further details provided in the following sections:

- ~~**Figure 7.17**: Flood depths of greater than 1.5 m (Design Flood Event)~~
- **Figure 7.1~~8~~7**: Summary of Freeboard Allowance and Panel Flood Depths
- Watercourses

7.5.3 As part of the development proposals, any works to the existing watercourses are to be limited, however there will be a requirement to undertake the following:

- Proposed surface water drainage outfalls from areas of significant hardstanding (such as the sub-station and battery storage areas).
- Bridging over watercourses to facilitate access. These have been kept to a minimum and any openings or soffits of structures will be sized or set accordingly to ensure there would be no constraint to flows.

- Two artificial otter holts are proposed on the ditch network and a new ditch is proposed to be dug in the ecological mitigation area (floodplain grazing marsh) near the River Trent.
- Works to desilt the watercourses are proposed and vegetation clearance on the banks will likely be required.

7.5.4 The above measures are not considered to have a negative impact to the capacity of the watercourses or quality of water flowing within them. To ensure that access and ecological corridors are maintained however, it is proposed that the following buffers will be provided between the top of bank of watercourses and any built development (i.e. modules, sub-stations, inverters and battery storage):

- A minimum 10 m buffer from all ordinary watercourse and field drains/ditches will be provided to any built development.
- A minimum 16 m buffer from the River Trent (main river) will also be provided to any development. It is worth noting that the buffers from the River Trent actually extend far beyond the 16 m minimum.

Fluvial Flood Risk

7.5.5 A sequential approach to the development layout has been taken and it is proposed that the majority of sensitive equipment (all substations and battery storage~~, and most inverters~~) will be located outside of the design flood extents, ensuring they remain operational even in times of flood. This will be secured through the **Works Plan [EN010159/APP/2.3]** and **Outline Design Parameters [EN010159/APP/5.9]**.

7.5.6 Due to the scale of the development, there is a need to incorporate more frequent inverters and as a result of this, there are locations where these will need to be within the design flood extent. It is proposed that these inverters will be raised above the design flood level with a freeboard of 300mm to ensure protection. Given the outline nature of the application, the exact location of inverters within the flood extent is not confirmed, however, a number of them are likely to be required well within the design flood extents (i.e. not close to the edge of the floodplain). In these locations, raised platforms via ground raising is not considered to be feasible as based on topography it will likely be difficult to provide level for level compensation within their vicinity. With this in mind, at this stage and as a worst case, it is suggested that the inverters be raised on voided structures, that allow the flow and storage of floodwater beneath, thereby having a negligible impact on flood flows and storage capacity. However, once the inverter locations are known at detailed design, options for land raising rather than voided structures will be reviewed and provided where feasible (this is an item that will be confirmed at detailed design and assessed as part of Flood Risk Mitigation Requirement 22, parts (2a) and (2b)).

~~7.5.6 Due to the scale of the development, there is a need to incorporate more frequent inverters and as a result of this, there are some locations where these will need to be located within the flood extents. Where this is the case, the inverters will be raised above the design flood level on raised platforms, providing a freeboard of 300 mm. To ensure that there will be a negligible loss in floodplain storage or blockage risk, it is proposed that these features will have a voided structure beneath, allowing the flow and storage of floodwater beneath. This has been agreed with the EA.~~

7.5.7 With regards to the solar modules, following discussions with the EA, they stated that ideally modules would be raised above the design flood levels, with 300 mm freeboard provided to the base of the ~~module~~ panel itself.

7.5.8 It is proposed that this be achieved across the majority of the Site by raising the bottom of panel heights (i.e. the height between the ground and base of the panel) in line with the values set out within the **Height Parameter Plan [EN010159/APP/2.5]**.

7.5.9 Although minimum bottom panel heights are stated within the Height Parameter Plan, the base of the panels will be raised as required to ensure that the panels will not become submerged. This change in bottom panel height will be achieved by adjusting the panel angle (within the 10 – 25 degree as set out within the outline design parameters) or by removing the bottom row of panels. The maximum top of panel heights will not be exceeded in taking this approach.

7.5.10 By taking the above approach, it is confirmed that during the design flood event, the panels will not be submerged at any location within the Proposed Development, thereby ensuring the panels themselves will not impact flood flows or storage capacity.

7.5.11 **Figure 7.1~~8~~:7 Summary of Freeboard Allowance [EN010159/APP/6.20]** illustrates that 300mm freeboard has been provided across the majority of the Site. There are however, some localised positions where this is not possible and the freeboard achieved is illustrated in Figure 3-11. The principle of localised reductions in freeboard has been discussed and agreed with the EA.

7.5.12 **Figure 7.17~~8~~: Summary of Freeboard Allowance [EN010159/APP/6.20]** also highlights locations where the bottom of panel height will likely need to be raised beyond the minimum values set out, to ensure they are not submerged. Given the outline nature of the Proposed Development at this stage and the variation in flood depth in these locations, it is not possible to confirm the exact bottom of panel height that panels in these areas will be raised to. This however, is an item that is included within Flood Risk Requirement ~~X~~22 of the DCO and will therefore be confirmed at detailed design.

~~7.5.7 The height to which the modules can be raised is subject to a number of environmental, engineering and maintenance considerations (including visual~~

~~impact, engineering feasibility, foundation design as well as impacts to archaeology). Through assessing these elements, it is concluded that the maximum height the modules can be raised to is 1.8 m (i.e. between ground level and the base of the module itself) and the assessment made is based on this.~~

~~7.5.8 Taking into the account the preference for 300 mm freeboard, development within areas where flood depths exceed 1.5 m will be avoided wherever possible. The extent of flood depths greater than 1.5 m is illustrated in **ES Volume 3, Figure 7.17: Flood Depths Exceeding 1.5m (Design Flood Event) [EN010159/APP/6.20]**.~~

~~7.5.9 There are, however, some localised positions where flood depths exceed 1.5 m (namely to the far eastern boundary and on the western banks of the River Trent). Although the depth of flooding in these locations will be greater than 1.5 m, many of the modules will still be above the flood level but will have a freeboard of less than 300 mm **ES Volume 3, Figure 7.18: Summary of Freeboard Allowance and Panel Flood Depths [EN010159/APP/6.20]**. Only a small portion of the solar modules would experience flooding at their base, and the depth of flooding to the modules will be limited, as illustrated in **ES Volume 3, Figure 7.18: Summary of Freeboard Allowance and Panel Flood Depths [EN010159/APP/6.20]**. The operational impact should this occur is considered to be acceptable. This approach has been discussed and agreed with the EA.~~

~~7.5.10 It is worth noting that modules will only be raised to the maximum height of 1.8 m above ground level where this is necessary (i.e. where flood depths reach and or exceed 1.5 m). In locations where flood depths are lower, the modules will be raised accordingly to a lower height above ground level and one which is optimal bearing in mind other design constraints.~~

~~7.5.11~~7.5.13 The raising of the modules will occur on slender frames meaning that the potential for debris blockages is kept to a minimum. In the event there is some minor obstruction, flood water would still continue to flow. Furthermore, the module frames will be designed so that they are strong enough to withstand debris impact.

~~7.5.12~~7.5.14 Existing ground levels will be maintained within the design flood extents, ensuring there will be a negligible impact in floodplain storage as a result of the Proposed Development.

Pluvial Flood Risk

~~7.5.13~~7.5.15 As with the fluvial mitigation, a sequential approach to the development layout has been taken. Sensitive equipment in the form of sub-stations and battery storage will be located outside of the pluvial flood extents, ensuring they remain operational even in times of flood. Most inverters will be located outside of the pluvial flood extents, however due to the scale of the development there is a need to incorporate more frequent inverters and as a result of this, there are some locations where these will need to be located within the flood extents.

Where this is the case, the inverters will be raised above the design flood level on raised platforms, providing a freeboard of 300 mm, whilst providing a voided structure beneath to allow the flow and storage of floodwater as agreed with the EA.

~~7.5.14~~7.5.16 With regards to module raising, the mitigation measures set out within the fluvial section will also provide protection from pluvial flooding. As agreed with the EA, the low risk surface water flood depths (2024 Risk of Flooding Dataset) have been considered in the west (associated with the ordinary watercourses) as a proxy for the design fluvial flood depths, and modules in these locations have been raised above the low risk depths accordingly.

Surface Water Drainage

~~7.5.15~~7.5.17 Solar farms (i.e. the modules themselves) are not considered to result in significant increases in runoff when compared to the existing greenfield situation. This is on the basis that runoff from the modules themselves will simply drop directly to the ground where the natural regime will be maintained. In line with the advice set out by Wallingford Hydrosolutions[19], it is proposed that the following measures will be implemented to ensure that any impacts of the solar modules are minimised:

- Disturbance to existing vegetation during construction will be minimised **ES Volume 2, Chapter 6: Biodiversity [EN010159/APP/6.6]**.
- Any disturbed vegetation will be re-established to maintain good ground cover across the Order Limits **ES Volume 2, Chapter 6: Biodiversity [EN010159/APP/6.6]**.
- Regular inspections and maintenance will be undertaken to ensure that vegetation cover is adequate; and
- Fencing will be provided where required to avoid any disturbance to the vegetation by livestock or similar.

~~7.5.16~~7.5.18 In addition to the above, it is proposed that strategic SuDS features such as filter drains, swales and basins/scrapes are incorporated within the solar array areas to encourage infiltration to the ground and also provide ecological and biodiversity benefits.

~~7.5.17~~7.5.19 For the larger areas of hardstanding (such as the BESS and sub-station), a quantified drainage strategy has been produced **ES Volume 3, Appendix 7.2: Flood Risk Assessment (FRA) and Outline Drainage Strategy [EN010159/APP/6.21]**, confirming the attenuation requirements in order to restrict runoff to match the greenfield rates before discharging to the surrounding

[19] Wallingford HydroSolutions, Here comes the sun, Accessed 06/02/2025.

watercourses. The SuDS features listed below will be incorporated within these areas, to provide water quantity, water quality, and biodiversity benefits:

- Permeable Surfaces
- Swales
- Filter Drains
- Detention Basins

~~7.5.18~~7.5.20 Should a fire occur at the BESS and sub-station areas and the fire suppression system be activated, a penstock valve downstream of the proposed detention basins will be automatically triggered to isolate potentially contaminated discharges. Should this occur, contaminated water would be tankered away and would not discharge to any watercourse. Appropriate arrangements would be put in place prior to operation of the Site. It is worth noting that the automatic penstock valve will include for manual backup operation in case there is an unlikely failure of the automated process.

7.5.21 The provision of unlined SuDS features to encourage some natural infiltration has been considered however, these are not feasible within the BESS and sub-station compounds due to the potential contamination risks associated with fire water runoff which will be contained. All SuDS features as listed above serving the BESS compound areas will therefore have an impermeable lining to prevent infiltration to the ground.

7.5.22 No discharge of surface water to the sewerage network is proposed.

~~7.5.19 Furthermore, the proposed BESS facilities and SuDS features will be lined to prevent the potential for contaminated fire water to infiltrate to the ground.~~

Water Authority Assets

~~7.5.20~~7.5.23 Bespoke stand-off distances (between 3 m and 6 m offsets) will be applied to the Anglian Water and Severn Trent strategic supply mains. The stand-offs from these assets will be free from construction, structures and haul and access roads.

Decommissioning

~~7.5.21~~7.5.24 **Outline Decommissioning Environmental Management Plan [EN010159/APP/7.6]** (oDEMP) is included as part of the DCO Application which sets out the best practice measures to be followed, and will be adopted to minimise the environmental impacts of the decommissioning works. A high level summary of items in the oDEMP are provided below.

- Any potential changes to the existing fluvial or surface water flow routes will be addressed within the oDEMP which will outline any temporary measures that would be put in place to control flood flows (such as preventing flows from entering open excavations). No machinery or spoil/materials would be stored within the identified flood extent, to ensure no impact on contractors, or deviation in flow routes due to the proposed works.
- Although there will be some changes to the drainage regime as a result of construction and decommissioning activities within the Order Limits (i.e. due to storage areas, facilities, and temporary changes in ground level), these will be addressed within the oDEMP. The oDEMP will outline any temporary measures that will be put in place to control surface water runoff (such as through temporary attenuation features) and reduce the risk of polluted surface water from discharging to ground or entering the ordinary watercourses within the Order Limits (such as through the use of environmental capture techniques and silt traps).

~~7.5.22~~7.5.25 Any open green SuDS features (such as swales and detention basins) constructed as part of the Proposed Development will remain following decommissioning. This is on the basis that these features will likely have created habitats which are valuable for biodiversity and as such should remain in-situ.

7.6 Assessment of Likely Significant Effects

Construction

Flood Risk from All Sources to Users of Construction Site

7.6.1 Construction works are to be undertaken in line with best practice and the processes outlined within the oCEMP **Outline Construction Environmental Management Plan [EN010159/APP/7.4].** This will include construction techniques to minimise the potential for flood water ingress to any open excavations from any source (including fluvial, pluvial and groundwater).

7.6.2 As part of the oCEMP, Site managers will be required to sign up to the EA's flood warning service for the area and will put in place appropriate flood evacuation procedures.

7.6.3 Given the local scale of the receptors (i.e. construction workers), the receptor sensitivity is considered to be low. Based on the temporary nature of the construction stage and the minor likely changes during construction (particularly taking into account the environmental measures implemented), the magnitude of impact is considered to be negligible.

7.6.4 Taking into account the above, the nature of effect to users of the construction Site is considered to be neutral, and therefore is deemed not significant.

Flood Risk from All Sources to Off Site Areas

7.6.5 Construction works are to be undertaken in line with best practice and the processes outlined within the oCEMP **Outline Construction Environmental Management Plan [EN010159/APP/7.4]**. This will include locating construction compounds outside of the floodplain wherever possible, ensuring there is no impact on floodplain storage or flood flows.

7.6.6 There may be some locations where this is not possible and in these cases, the oCEMP will set out measures to ensure that compounds are set out to not impede flows and are fenced appropriately to ensure that flood flows can continue unimpeded and prevent potential debris being washed away and causing blockage risks outside of the Order Limits.

7.6.7 Ground levels during construction will not be raised, with the exception of temporary spoil from excavations. These spoil heaps will be local and temporary in nature and will be moved to locations outside of the floodplain as soon as possible, to ensure there is no loss in floodplain storage.

7.6.8 As part of the oCEMP, temporary measures to manage surface water runoff from any hardstanding areas will be put in place. This will include attenuation features to reduce the rate of runoff where appropriate, and manage any potential silts/pollution. This will ensure that any increases in runoff volume and potential increased flood risk outside of the Order Limits are mitigated against, alongside ensuring that water quality is maintained.

7.6.9 Given the scale of areas surrounding the Order Limits that could be impacted by flood risk, the receptor sensitivity is considered to be low. Based on the temporary nature of the construction stage and the minor likely changes during construction (particularly taking in to account the environmental measures implemented), the magnitude of impact is considered to be negligible.

7.6.10 Taking into account the above, the nature of effect of flood risk to areas outside of the Order Limits as a result of construction is considered to be neutral, and therefore not significant.

Existing Watercourses

7.6.11 Within the oCEMP **Outline Construction Environmental Management Plan [EN010159/APP/7.4]**, construction offsets to watercourses will be set out to ensure that activities will not have a detrimental impact to the physical characteristics of the existing watercourses. The only exception to this will be to any works directly associated with the watercourses (such as new outfalls, bridging and horizontal directional drilling beneath the Trent to install cabling).

7.6.12 Where not disapplied through the DCO, temporary and permanent consents would be obtained where necessary from the Environment Agency for works

affecting Main Rivers, and from the IDB for works affecting ordinary watercourses.

7.6.13 As part of the oCEMP, temporary measures to manage surface water runoff from any hardstanding areas will be put in place. This will include measures to treat proposed runoff prior to ensure water quality is acceptable prior to discharging to any existing watercourses.

7.6.14 Furthermore, the oCEMP will also set out measures to control and provide treatment to runoff from construction activities that could be polluted as a result of spills from construction plant or mobilisation of silts/contaminants during earthworks.

7.6.15 Given the scale and location of the ordinary watercourses (i.e. smaller and generally downstream within their catchments) and the scale of the River Trent (i.e. larger and therefore subject to significant dilution, and not located within a drinking water safeguard area), the sensitivity of watercourses as a receptor are considered to be low.

7.6.16 Based on the temporary nature of the construction stage and the minor likely changes during construction (particularly taking into account the environmental measures implemented), the magnitude of impact is considered to be negligible.

7.6.17 Taking into account the above, the nature of effect to watercourses as a result of construction is considered to be neutral, and therefore not significant.

Surrounding Anglian Water and Severn Trent Water Mains

7.6.18 Construction works are to be undertaken in line with best practice and the processes outlined within the oCEMP **Outline Construction Environmental Management Plan [EN010159/APP/7.4]**. This will include construction techniques to minimise the potential for damage to utilities, including water mains.

7.6.19 In order to demonstrate that the Proposed Development will not result in any impact on Anglian Water and Severn Trent assets, all work within proximity to the existing assets will be undertaken following consultation and agreement of the necessary protective provisions with the relevant water authority.

7.6.20 Anglian Water through initial consultation have recommended that bespoke stand-off distances are applied to the strategic supply mains of between 4 m and 6 m. Stand-offs from these assets will be free from construction, structures and haul and access roads.

7.6.21 Given the local scale of the receptors (i.e. to facilitate strategic distribution), the receptor sensitivity is considered to be medium. Based on the temporary nature of the construction stage and the minor likely changes during construction

(particularly taking in to account the environmental measures implemented), the magnitude of impact is considered to be negligible.

7.6.22 Taking in to account the above, the nature of effect to Anglian Water and Severn Trent assets is considered to be minor adverse, and therefore is deemed not significant.

Public Water Supply

7.6.23 The construction works have been designed to reduce onsite water demand so far as possible through the inclusion of prefabricated components that are constructed offsite (such as the panels and supports) and require limited construction activity during installation. However, there will inherently be a requirement for incoming water to support construction techniques as well as for personnel on site.

7.6.24 Indicative calculations have been undertaken to determine the potential water demand during construction and in a worse case scenario it is anticipated that 64,800l/d (64.8m^3/d) could be required. It is worth noting however, that this value is conservative for a number of factors such as peaking factor, number of personnel and water usage per person. The details of water demand would be refined at detailed design once a contractor has been appointed and the construction works and programme refined.

7.6.25 All water companies are required to produce a Water Resources Management Plan (WRMP)[20] to show how they plan to maintain a secure supply of water to all their customers over the next 25 years. Anglian Water's WRMP aims to ensure that they can continue to meet customer demand in the future whilst having a minimum impact on the environment.

7.6.26 As discussed with Anglian Water, whilst they do not have a statutory obligation to supply non-domestic purposes, they do factor water use from non-domestic uses into their WRMP and will work to support business in their region and supply water where they can. However, they do reserve the right to decline to supply water to protect existing supplies and the environment.

~~7.6.26~~7.6.27 A WRA has been prepared and submitted to Anglian Water, who have since confirmed that, at the current time, there is capacity within the existing mains to provide domestic, welfare and non-domestic water to the development at the construction phase.

~~7.6.27~~7.6.28 Wherever possible, water is to be sourced from non-potable sources (this could include using the existing abstraction licences from the River Trent) or

[20] Anglian Water, Water Resources Management Plan, Revised Draft WRMP24, August 2023. Accessed 20 February 2025.

private supplies to reduce the pressure on demand from the water company however, the feasibility of this is to be confirmed at detailed design.

~~7.6.28~~7.6.29 At detailed design, further clarity and detailed estimates of potable water demand will be provided and further consultation held with Anglian Water to confirm their capacity to supply this water at that time. This commitment is made within the **Outline Construction Environmental Management Plan [EN010159/APP/7.4]**.

~~7.6.29~~7.6.30 Water demand associated with the construction phase will be temporary, with the construction phase anticipated to be completed over the course of 2 years.

~~7.6.30~~7.6.31 Given the regional scale of the receptors (i.e. to facilitate regional supply), the receptor sensitivity is considered to be medium. Based on the protective measures implemented by Anglian Water (i.e. declining requests in preference of protecting existing supply and the environment), the magnitude of impact is considered to be negligible.

~~7.6.31~~7.6.32 Taking into account the above, the nature of effect to public water supply during construction is considered to be minor adverse and therefore is deemed not significant.

Operational and Maintenance

Flood Risk from All Sources to Users of the Completed Development

~~7.6.32~~7.6.33 Although large areas of the Order Limits could be impacted by flooding, it is anticipated that there will be limited occupancy at the Order Limits (generally limited to maintenance teams).

~~7.6.33~~7.6.34 As part of the Order Limits management, there will be a requirement to sign up to the EA's flood warning service for the area and will put in place appropriate flood evacuation procedures. As set out in the FRA, safe evacuation routes away from the Order Limits or to safe dry refuge areas are provided and would be detailed within the evacuation plans.

~~7.6.34~~7.6.35 Given the local scale of the receptors (i.e. maintenance workers), the receptor sensitivity is considered to be low. Based on the temporary occupancy at the Order Limits and mitigation proposed (i.e. flood warning and evacuation plan being followed, meaning occupants will have moved outside of areas at risk), the magnitude of impact is considered to be negligible.

~~7.6.35~~7.6.36 Taking into account the above, the flood risk nature of effect to users of the Site is considered to be neutral, and therefore not significant.

Flood Risk from All Sources to Off Site Areas

~~7.6.36~~7.6.37 **ES Volume 3, Appendix 7.2: Flood Risk Assessment (FRA) and Outline Drainage Strategy [EN010159/APP/6.21]** demonstrates that there will be no increase in flood risk from any sources as a result of the completed development. This is as a result of the proposed environmental measures set out previously, and as summarised below:

- Sequentially setting out the proposed development, ensuring that sensitive equipment is not located within the floodplain, wherever possible.
- The raising of equipment (both solar modules and inverters where necessary) above the design flood level (with the exception of some small localised areas) on frames and voided structures, to ensure there will be a negligible loss in floodplain storage or adverse changes in flood flows.
- No land raising being proposed within the Order Limits, ensuring there is a negligible impact on floodplain storage.
- Managing surface water runoff from any areas of significant hardstanding and restricting runoff to match the natural greenfield runoff rates. This ensures there is no increase in flood risk downstream.

~~7.6.37~~7.6.38 Following discussions with the EA, although not considered to be a significant concern, a precautionary assessment of the potential volume loss associated with the panel mounting structures ~~, partially submerged panels~~ and the inverter voided structures was undertaken. This assessment is considered to be conservative and confirms that in the design flood event, increased flood depths of ~~4.1~~3.5mm and 2.~~3~~2mm could be observed to the east and west of the River Trent respectively. These increased flood depths are within the 5mm tolerance that the EA indicated through consultation would be acceptable ~~as this is within model tolerances~~. The impact on flood risk is therefore considered to be negligible. Further information on the potential volume loss assessment is provided within **ES Volume 3, Appendix 7.2: Flood Risk Assessment (FRA) and Outline Drainage Strategy [EN010159/APP/6.21]**.

~~7.6.38~~7.6.39 Given the local scale and numbers of the receptors surrounding the Order Limits, the receptor sensitivity is considered to be low. Based on the fact that there will only be minor changes in flood risk as a result of the environmental measures implemented, the magnitude of impact is considered to be negligible.

~~7.6.39~~7.6.40 Taking into account the above, the nature of effect of flood risk to areas outside of the Order Limits is considered to be neutral, and therefore not significant.

Existing Watercourses

~~7.6.40~~7.6.41 **ES Volume 3, Appendix 7.2: Flood Risk Assessment (FRA) and Outline Drainage Strategy [EN010159/APP/6.21]** demonstrates that any impacts to the existing watercourses will be managed to ensure there is no deterioration in their capacity, status, water quality or potential to reach good status. This is as a result

of the proposed environmental measures (which will be secured through the DCO) set out previously and summarised below:

- There will be no works to the watercourses, with the exception of provision of new surface water drainage outfalls and localised bridging. These will be designed such that there will be no increase in flood risk by managing surface water runoff rates to the watercourses and ensuring that any bridging features are sized adequately so that flow capacity is maintained.
- Significant offsets between the watercourses and built development is to be provided.
- Managing surface water runoff from any areas of significant hardstanding and restricting runoff to match the natural greenfield runoff rates, ensuring there is no impact on hydromorphology of the watercourses.
- Any new surface water connections to the watercourses will receive sufficient treatment upstream through the use of SuDS features, ensuring no detrimental impacts on water quality (and therefore fish or biological elements).

~~7.6.41~~7.6.42 It is worth noting that any permanent features to the watercourses will be designed to complement ecology and biodiversity, and will also be subject to the protective provisions agreed with the EA and IDB to further ensure that environmental impacts are considered and managed appropriately.

~~7.6.42~~7.6.43 Given the scale and location of the ordinary watercourses (i.e. smaller and generally downstream within their catchments) and the scale of the River Trent (i.e. larger and therefore subject to significant dilution, and not located within a drinking water safeguard area), the sensitivity of watercourses as a receptor are considered to be low. Based on the relatively minor changes within the completed development (particularly taking in to account the environmental measures implemented), the magnitude of impact is considered to be negligible.

~~7.6.43~~7.6.44 Taking into account the above, the nature of effect to watercourses as a result of operation is considered to be neutral, and therefore not significant.

Surrounding Anglian Water and Severn Trent Water Mains

~~7.6.44~~7.6.45 Anglian Water through initial consultation have recommended that bespoke stand-off distances are applied to the strategic supply mains of between 4 m and 6 m. Stand-offs from these assets will be free from construction, structures and haul and access roads.

~~7.6.45~~7.6.46 Severn Trent have recommended that stand-off distances are applied to their assets of between 3 m and 6 m. Stand-offs from these assets will be free from construction, structures and haul and access roads.

~~7.6.46~~7.6.47 Given the local scale of the receptors (i.e. to facilitate strategic distribution), the receptor sensitivity is considered to be medium. Based on the protective

measures to be incorporated (i.e. standoffs required from the assets to any development), the magnitude of impact is considered to be negligible.

~~7.6.47~~7.6.48 Taking into account the above, the operational nature of effect to Anglian Water and Severn Trent assets is considered to be minor adverse, and therefore is deemed not significant.

Public Water Supply

~~7.6.48~~7.6.49 Initial calculations have been undertaken to determine the potential water demand during operation. As with the calculations for construction, conservative assumptions with regards to peaking factors, number of personnel and water usage have been made. It is anticipated that onsite personnel will cumulatively require approximately 1,620 litres/day. A single round of panel cleaning over a period of 2 years is anticipated to require approximately 4,195,000 litres, which equates to a daily average of 5,747 litres/day. Therefore, it is anticipated that the Proposed Development will require on average 7,367 litres/day in total.

7.6.50 Through consultation Anglian Water have indicated that where new and unplanned non-domestic supply requests are received which exceed 20,000 litres/day, they may choose to decline the request to protect existing supplies and the environment. On the basis that the worst-case anticipated water demand for the operational phase is 7,367 litres/day, it is not anticipated that Anglian Water will decline to provide potable water.

7.6.51 A WRA has been prepared and submitted to Anglian Water, who have since confirmed that, at the current time, there is capacity within the existing mains to provide domestic, welfare and non-domestic water to the development at the operational phase.

~~7.6.49~~

~~7.6.50~~7.6.52 It is worth noting however, that further clarity and detailed estimates of potable water demand will be provided at detailed design and further consultation held with Anglian Water to confirm their capacity to supply water.

~~7.6.51~~7.6.53 Given the regional scale of the receptors (i.e. to facilitate regional supply), the receptor sensitivity is considered to be medium. Based on the protective measures implemented by Anglian Water (i.e. declining requests in preference of protecting existing supply and the environment), the magnitude of impact is considered to be negligible.

~~7.6.52~~7.6.54 Taking into account the above, the operational nature of effect to public water supply is considered to be minor adverse, and therefore is deemed not significant.

Decommissioning

~~7.6.53~~7.6.55 From a hydrology perspective, the environmental measures, sensitivity, magnitude of impact and overall significance of effect are considered to be the same as for the construction stage. A summary of which is provided below.

~~7.6.54~~7.6.56 The likely effect of flood risk from all sources on users of the construction site (low sensitivity) during decommissioning is considered to be a direct and short-term effect, and is of negligible impact. This nature of effect is neutral and not significant.

~~7.6.55~~7.6.57 The likely effect of flood risk from all sources on areas outside of the Order Limits (low sensitivity) during decommissioning is considered to be a direct and short-term effect, and is of negligible impact. This nature of effect is neutral and not significant.

~~7.6.56~~7.6.58 The likely effect of the decommissioning works on the physical properties and quality of the existing watercourses (low sensitivity) is considered to be a direct and short-term effect, and is of negligible impact. This nature of effect is neutral and not significant.

~~7.6.57~~7.6.59 The likely effect of the decommissioning works on the surrounding Anglian Water and Severn Trent Water Mains (medium sensitivity) is considered to be a direct and short-term effect, and is of negligible impact. This nature of effect is minor adverse and not significant.

~~7.6.58~~7.6.60 The likely effect of the decommissioning works on public water supply (medium sensitivity) is considered to be a direct and short-term effect, and is of negligible impact. This nature of effect is minor adverse and not significant.

7.7 Summary

7.7.1 **Table 7.4** sets out a summary of the likely significant environmental effects considered.

Table 7.4 Summary of Significant Environmental Effects

Receptor	Environmental Measures	Description of the Effect	Direct / Indirect	Duration	Geographic Scale	Nature of Effect	Significant / Not Significant	Next Steps
Construction								
Flood Risk from All Sources to Users of Construction Site	*oCEMP*	*Flood Risk from All Sources*	*Direct*	*Short Term*	*Local*	*Neutral*	*Not Significant*	*Contractor to agree oCEMP with LPA*
Flood Risk from All Sources to Off Site Areas	*oCEMP*	*Flood Risk from All Sources*	*Direct*	*Short Term*	*Local*	*Neutral*	*Not Significant*	*Contractor to agree oCEMP with LPA*
Existing Watercourses	*oCEMP*	*Impacts to existing watercourses in terms of flood risk, water quality and hydromorphology*	*Direct*	*Short Term*	*Local*	*Neutral*	*Not Significant*	*Contractor to agree oCEMP with LPA.* *Protective provisions to be agreed with the EA, LLFA and IDB as necessary.*
Surrounding Anglian Water and Severn Trent Water Mains	*oCEMP*	*Impacts to existing Anglian Water and Severn Trent distribution mains*	*Direct*	*Short Term*	*Local*	*Minor adverse*	*Not significant*	*Contractor to agree oCEMP with LPA.* *Anglian Water and Severn Trent to be consulted regarding proximity of works to their assets, standoffs to be agreed.*

Receptor	Environmental Measures	Description of the Effect	Direct / Indirect	Duration	Geographic Scale	Nature of Effect	Significant / Not Significant	Next Steps
Public Water Supply	*Water Resources Plan*	*Impacts to public water supply*	*Direct*	*Short Term*	*Regional*	*Minor Adverse*	*Not significant*	*Water supply to be agreed with Anglian Water.*
Operation								
Flood Risk from All Sources to Users of Completed Site	*Locating sensitive equipment outside of floodplain*	*Flood Risk from All Sources*	*Direct*	*Long Term*	*Local*	*Neutral*	*Not Significant*	*Preparation of Flood Evacuation Procedure and routing*
Flood Risk from All Sources to Off Site Areas	*Raising of modules and sensitive equipment above design flood levels* *No raising of ground within design flood extents*	*Flood Risk from All Sources*	*Direct*	*Long Term*	*Local*	*Neutral*	*Not Significant*	*Detailed mitigation through condition (i.e. levels of raising infrastructure and engineering design methods)*
Existing Watercourses	*Minimised works to watercourses* *Watercourse offsets* *Surface Water Drainage Strategy*	*Impacts to existing watercourses in terms of flood risk, water quality and hydromorphology*	*Direct*	*Long Term*	*Local*	*Neutral*	*Not Significant*	*Detailed design through condition (i.e. of any watercourse features such as outfalls and design of on site drainage)*

Receptor	Environmental Measures	Description of the Effect	Direct / Indirect	Duration	Geographic Scale	Nature of Effect	Significant / Not Significant	Next Steps
Surrounding Anglian Water and Severn Trent Water Mains	*Location of development to adhere to required easements*	*Impacts to existing Anglian Water and Severn Trent distribution mains*	*Direct*	*Long Term*	*Local*	*Minor adverse*	*Not significant*	*Standoff distances to be agreed.*
Public Water Supply	*Water Resources Plan*	*Impacts to public water supply*	*Direct*	*Short Term*	*Regional*	*Minor Adverse*	*Not significant*	*Water supply to be agreed with Anglian Water.*
Decommissioning								
Flood Risk from All Sources to Users of Decommissioning Site	oDEMP	*Flood Risk from All Sources*	*Direct*	*Short Term*	*Local*	*Neutral*	*Not significant*	*Contractor to agree oDEMP with LPA*
Flood Risk from All Sources to Off Site Areas	oDEMP	*Flood Risk from All Sources*	*Direct*	*Short Term*	*Local*	*Neutral*	*Not significant*	*Contractor to agree oDEMP with LPA*
Existing Watercourses	oDEMP	*Impacts to existing watercourses in terms of flood risk, water quality and hydromorphology*	*Direct*	*Short Term*	*Local*	*Neutral*	*Not significant*	*Contractor to agree oDEMP with LPA.* *Protective provisions to be agreed with the EA, LLFA and IDB as necessary.*

Receptor	Environmental Measures	Description of the Effect	Direct / Indirect	Duration	Geographic Scale	Nature of Effect	Significant / Not Significant	Next Steps
Surrounding Anglian Water and Severn Trent Water Mains	*dCEMP*	*Impacts to existing Anglian Water and Severn Trent distribution mains*	*Direct*	*Short Term*	*Local*	*Minor adverse*	*Not significant*	*Contractor to agree oCEMP with LPA.* *Anglian Water and Severn Trent to be consulted regarding proximity of works to their assets.*
Public Water Supply	*Water Resources Plan*	*Impacts to public water supply*	*Direct*	*Short Term*	*Regional*	*Minor Adverse*	*Not significant*	*Water supply to be agreed with Anglian Water.*

one earth

solar farm