Springwell Solar Farm

Environmental Statement

Volume 1
Chapter 15: Water

APFP Regulation 5(2)(a)

Planning Act 2008

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

EN010149/APP/6.1
November 2024
Springwell Energyfarm Ltd

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15. Water

15.1. Introduction

15.1.1. This chapter presents an assessment of likely significant effects arising from the construction, operation (including maintenance) and decommissioning of the Proposed Development upon Water. The full description of the Proposed Development is provided within **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1]**.

15.1.2. This chapter is supported by the following figures and appendices presented in the **ES Volume 2 [EN010149/APP/6.2]** and **ES Volume 3 [EN010149/APP/6.3]**:

- **Figure 15.1: Watercourses and Water Receptors**;
- **Appendix 15.1: WFD Waterbodies Stage 1 Screening Technical Note**; and
- **Appendix 15.2: WFD Engagement**.

15.1.3. This chapter should be read in conjunction with the following document(s) that support the Development Consent Order (DCO) Application:

- **Flood Risk Assessment [EN010149/APP/7.16]**.

15.1.4. This chapter should be read in conjunction with the following assessment chapter(s) in **ES Volume 1 [EN010149/APP/6.1]**:

- **Chapter 11: Land, Soil and Groundwater**.

15.2. Legislative framework, planning policy and guidance

15.2.1. This assessment has been undertaken with regard to the following legislation, planning policy and guidance.

15.2.2. It should be noted that this chapter does not assess the compliance of the Proposed Development against relevant planning policy. Such an assessment is presented in the **Planning Statement [EN010149/APP/7.2]**.

Legislation

- Land Drainage Act 1991 **[Ref. 15-1]**;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 **[Ref. 15-2]**;
- Flood and Water Management Act 2010 **[Ref. 15-3]**;
- Water Act 2003 **[Ref. 15-4]**;

- Water Resources Act 1991 **[Ref. 15-5]**;
- Water Act 2014 **[Ref. 15-6]**;
- Water Industry Act 1991 **[Ref. 15-7]**;
- The Environmental Permitting (England and Wales) Regulations 2016 **[Ref. 15-8]**;
- Control of Pollution (Oil Storage) (England) Regulations 2001 **[Ref. 15-9]**;
- The Flood Directive 2007/60/EC **[Ref. 15-10]**, which is transposed into legislation for England via the Retained EU Law (Revocation and Reform) Act 2023 **[Ref. 15-11]**; and
- The Environment Act 2021 **[Ref. 15-12]**.

National planning policy

- Overarching National Policy Statement for Energy (NPS EN-1) (2023) **[Ref. 15-13]** - Section 5.8 'Flood Risk' outlines the requirement to consider an approach to flood risk and flood risk management (as summarised in paragraph 5.8.7), and the requirements for surface water drainage (as summarised in paragraph 5.8.27);
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2023) **[Ref. 15-14]** – Section 2.10 gives specific consideration to solar development, specifically in relation to the layout and design which should consider the mitigation of flood risk (paragraph 2.10.60). The Flood Risk Assessment shall consider the impact of drainage (as per paragraph 2.10.84) and value delivered by drainage and flood attenuation (as per paragraph 2.10.154);
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (2023) **[Ref. 15-15]** – Section 2.3 details issues relating to climate change and outlines the considerations required with relation to flood risk;
- National Planning Policy Framework (NPPF) (2023) **[Ref. 15-16]** - Section 14 'Meeting the challenge of climate change, flooding and coastal change' sets out the criteria for development and flood risk by stating that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. Consultation on the proposed reform to the NPPF ended on 24 September 2024. The **Planning Statement [EN010149/APP/7.2]** considers both the current and consulted NPPF;

  Flood Risk and Coastal Change National Planning Practice Guidance (Department for Levelling Up, Housing and Communities, 2022) **[Ref. 15-17]**.

Local planning policy

- Central Lincolnshire Local Plan (2018 - 2040) adopted 13 April 2023 **[Ref. 15-18]**.

Guidance

- Planning Inspectorate (PINS) - Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (September 2024) **[Ref. 15-19]**;
- Flood Risk Assessments: climate change allowances (Environment Agency, 2022) **[Ref. 15-20]**.

15.3. Stakeholder engagement

15.3.1. **Table 15.1** provides a summary of the stakeholder engagement activities undertaken separately from the Environmental Impact Assessment (EIA) scoping, non-statutory consultation, statutory consultation and targeted consultation process in support of the preparation of this assessment, as well as detailing the matters raised, and how regard has been afforded by the Applicant to each matter raised.

15.3.2. **ES Volume 3, Appendix 5.3: Scoping Opinion Response Matrix [EN010149/APP/6.3]** presents the responses received via the Scoping Opinion and the Applicant's response to each matter raised.

15.3.3. Appendix A-4, J-1, J-2 and K-3 of the **Consultation Report [EN010149/APP/5.1]**, which is submitted in support of the DCO Application, sets out the feedback received during non-statutory, statutory and targeted consultation and how regard has been afforded by the Applicant to each matter raised.

Table 15.1 Summary of stakeholder engagement

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
Environment Agency	22 June 2023	A meeting was undertaken with the Environment Agency via a video conference call. Flood risk was discussed; the Environment Agency advised they had no initial concerns on solar panels within the Flood Zone as long as raised above the flood level.	The depth of flooding and reasonable assumptions for the impacts of climate change on flood depths have been assessed as part of a Flood Risk Assessment using the data available on flooding.	Flood risk has been considered in detail as part of the **Flood Risk Assessment [EN010149/APP/7.16]**
Environment Agency	07 March 2024 30 April 2024	On 7 March 2024, a meeting was held with the Environment Agency via a video conference call. Several questions were posed to the Environment Agency regarding their opinion on matters pertaining to flood risk and the Water Framework Directive (WFD) following their Section 42 comments in response to the Preliminary Environmental Information Report (PEIR). In summary, the following questions were asked to the Environment Agency: • Are the development proposals acceptable to the Environment	The Environment Agency provided a written response to the matters raised on 30 April 2024. A summary of the Environment Agency response is as follows: • "*Whilst there are some areas of development within the Flood Zone, the type of development is acceptable*"; • "*The use of JFlow depths for this*	**Section 15.5** describes the baseline. **Section 15.9** assesses the likely significant effects on the WFD waterbody (Metheringham Beck) which is ultimately concluded to be not significant. Additionally, following the consultation response from the Environment Agency and submission

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		Agency with respect to Solar Photovoltaic (PV) modules within Flood Zone 2 and Flood Zone 3? • Are JFLOW (nationalised flood modelling) flood depths acceptable given the low risk nature of solar panels? • Can the Environment Agency provide guidance on the approach to the WFD and what the desired deliverables are in accordance with Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive? • Can the Environment Agency provide any guidance or recommendations for what they require to see to evidence that firewater runoff has been fully considered and mitigated within the design? Further to this meeting, a **WFD Waterbodies Stage 1 Screening**	*development is acceptable. Whilst JFlow data is inaccurate, there is adequate freeboard in the height the panels are raised by which would not change even if local modelling was to be undertaken*."; • "*Your approach to the WFD seems appropriate for surface waters and we agree with your conclusion that no WFD Screening, Scoping or Assessment is required*."; • "*We recommend that you consider the guidance provided in*	of the **ES Volume 3, Appendix 15.1: WFD Waterbodies Stage 1 Screening Technical Note ([EN010149/APP/6.3]**), it was concluded there would be no requirement for a Stage 2 Scoping or Stage 3 WFD assessment. Matters relating to flood risk have been scoped out of this Environmental Statement (ES) (see **Table 15.2**).

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		Technical Note (ES Volume 3, Appendix 15.1 [EN010149/APP/6.3] was submitted to the Environment Agency as per the guidance summarised by Figure 1 of the Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive **[Ref. 15-19]** to confirm there would be no impacts on the nearby Metheringham Beck WFD designated watercourse given the distance and nature of the development proposals.	*the Planning Practice Guidance on Renewable and low carbon energy provides guidance for Battery Energy Storage Systems*.". The responses from the Environment Agency have been incorporated into development proposals where applicable.	
Witham First Internal Drainage Board	4 March 2024	Witham First was asked a number of questions in an email dated 19 January 2024 regarding their Section 42 comments provided in response to the PEIR. In summary, the following questions were asked to Witham First and points raised: • To which watercourses do the Witham First Internal Drainage Board Byelaws apply?	Witham First provided a written response on 4 March 2024. In summary, their response noted; • Witham First will act on behalf of the Lead Local Flood Authority as the agent for consents and enforcement matters	Matters raised by Witham First Internal Drainage Board do not relate to the receptors scoped into this assessment. Further detail on the receptors scoped into this assessment is provided in **Table 15.2** and the baseline environment

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		• There will be Solar PV modules within the Witham First Drainage Board district boundary; • Areas of hardstanding that are positively drained of surface water runoff will discharge to local watercourses at greenfield runoff rates;	for watercourses within the Internal Drainage Board boundary; • It was noted that Solar PV modules will be within the Internal Drainage Board boundary; • New discharges to watercourses will be subject to Witham First consent (if applicable). The responses from Witham First Internal Drainage Board have been incorporated into development proposals where applicable.	(including the Witham First Internal Drainage Board's role as consenting authority for those watercourses within its boundary) is detailed in **Section 15.5**.
Lead Local Flood Authority (Lincolnshire	26 January 2024 29 January 2024	Descriptive text outlining the proposed drainage strategy was sent to the Lead Local Flood Authority on 26 January 2024. The email sent also asked the authority if they could provide any guidance on	The response provided by the Lead Local Flood Authority on 29 January 2024 noted in summary the following:	The **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment**

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
County Council)		discharge rate proposals, and whether there was a preference for the use of Sustainable Drainage Systems (SuDS).	• Outline surface water drainage proposals were what would be expected for a typical solar farm submission; • Removal of low level vegetation and grasses should be limited and replaced by seeding and planting to ensure no increase in rainfall runoff from Solar PV modules; • Access tracks should be of permeable material; • Proposed large impermeable areas should have appropriate drainage strategies which limit	**[EN010149/APP/7.16]**) has been prepared and outlined within **Section 15.6** of this chapter**,** with the full document provided within the **Flood Risk Assessment [EN010149/APP/7.16]** which is submitted in support of the DCO application.

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
			runoff to greenfield runoff rates (or a practical minimum); • SuDS principles should be used. The responses from the Lead Local Flood Authority have been incorporated into the development proposals were applicable.	
North Kesteven District Council	25 July 2024	On 25 July 2024 a meeting was held with North Kesteven District Council via a video conference call. The Sequential Approach that had been undertaken throughout the design development, particularly the principle of placing only Solar PV modules within Flood Zone 2 and Flood Zone 3, was outlined. It was asked of North Kesteven District Council what evidence they require to see to show the Sequential Test had been met.	An email follow up response from the meeting was provided on 25 July 2024. The response detailed that the Sequential Test would be required and that it should show the Applicant has carried out an assessment of other alternative sites within lower flood risk areas. The email response also confirmed an Exception Test	The Sequential Test has been undertaken in full in the 'Alternative Sites Assessments', which forms part of the **Planning Statement [EN010149/APP/7.2]** which is submitted in support of the DCO Application. This is considered to be acceptable based on

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
			will also need to be undertaken for development within Flood Zone 3. Following this response from North Kesteven District Council, a Sequential Test and Exception Test have been undertaken.	the response from North Kesteven District Council regarding the presentation of the Sequential Test which stated the following: *"The sequential test is usually set out in the FRA but if you choose to have it in a planning document instead and cross-referenced within the FRA that would assist the Examiner."*
Anglian Water	25 September 2023	As part of initial stakeholder engagement the Applicant provided Anglian Water with information regarding the requirements of potable and non-potable water supplies. The meeting notes provided explained: • Design is minimising interaction and avoiding diversions;	This chapter outlines how water supply has been considered as part of the additional mitigation. The table of the preferred supply of potable and non-potable water for the operational and construction phases that was shared within the meeting	**Section 15.8** of this chapter outlines the considerations of the potable water and non-potable water uses as part of the operational and construction phases. This is comprised of

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		• Peak water requirements during construction will be based on approximately 400 persons and no on-site concrete mixing; • Operational requirements are for up to 30 persons during normal operation. As part of the meeting a table was presented which provided detail on preferred supply sources of potable water and non-potable water for the construction and operational phases. The meeting also highlighted that it was assumed at this stage that sewage treatment would be in-situ and no sewer connection would be needed. The meeting notes indicate that Anglian Water had no concerns for potable water supplies for welfare facilities for the operational phase, and that Anglian Water welcomed the	has been used the basis for the considerations of water supply within the additional mitigation. The matters pertaining to the sewerage have been addressed within the **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment [EN010149/APP/7.16]**)	information provided within meetings with Anglian Water and is included as part of the **Statement of Common Ground - Anglian Water Services Ltd [EN010149/APP/7.21]** Confirmation that surface water runoff will not be discharged to Anglian Water surface water or combined sewers and that foul water will be treated within the Site without a connection to Anglian Water foul or combined sewer systems is provided within the **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk**

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		preference for rainwater harvesting for non-potable water supplies.		**Assessment [EN010149/APP/7.16]**).
Anglian Water	24/09/24	As part of continued stakeholder engagement the Applicant provided Anglian Water with information regarding the requirements of potable and non potable water supplies. The meeting notes provided explained: • Information regarding Anglian Water assets and asset protection investigations; • A note that rainwater harvesting to be prioritised for construction and operational use as non-potable water; • A table detailing that during operational and construction phases potable water will have a preferred mains supply to the welfare facilities at the Project substation and bowser will supply temporary facilities. Non-potable	This chapter outlines how water supply has been considered as part of the additional mitigation. The table of the preferred supply of potable and non-potable water for the operational and construction phases that was shared within the meeting has been used the basis for the considerations of water supply within the additional mitigation. The matters pertaining to the sewerage have been addressed within the **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment [EN010149/APP/7.16]**)	**Section 15.8** of this chapter outlines the considerations of the potable water and non-potable water uses as part of the operational and construction phases. This is comprised of information provided within meetings with Anglian Water and is included as part of the **Statement of Common Ground - Anglian Water Services Ltd [EN010149/APP/7.21]** Confirmation that surface water runoff will not be discharged to Anglian Water surface

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		water will have a preferred supply from rainwater harvesting for operational and construction phases; • A surface water drainage strategy will be consulted on with Anglian Water prior to construction; • A draft issue of the statement of common ground was issued prior to the meeting for discussion; • Further detail on the methodology for the protection of Anglian water assets.		water or combined sewers and that foul water will be treated within the site without a connection to Anglian Water foul or combined sewer systems is provided within the **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment [EN010149/APP/7.16]**).

15.4. Approach to the assessment

Study area

15.4.1. For the purposes of this assessment, the Site and a 1 kilometres (km) buffer have been considered as the study area to identify hydrological receptors that could be impacted by the construction, operation (including maintenance) and decommissioning of the Proposed Development. A 1km buffer is considered appropriate for water environment assessments, based on professional judgement. This is considered a sufficient distance to enable the deposition of silts in overland flows and dilution of any concentrated pollutants so that waterbodies at a greater distance than 1km would not be at significant risk of being affected.

15.4.2. The study area is depicted within **ES Volume 2, Figure 15.1: Watercourses and Water Receptors [EN010149/APP/6.2]** to show the areas of Flood Zone 2 and Flood Zone 3 and watercourses which have been considered as part of this assessment.

Scope of the assessment

15.4.3. The scope of this assessment has been established throughout the EIA process and design of the Proposed Development. Further information can be found in **ES Volume 1, Chapter 5: Approach to the EIA [EN010149/APP/6.1]**.

15.4.4. This section provides an update to the scope of the assessment from that presented in the Scoping Report which is located in **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]** and re-iterates/updates the evidence base for scoping matters in or out following further iterative assessment.

Receptors/matters scoped into the assessment

15.4.5. **Table 15.2** presents the receptors/matters that are scoped into the assessment reported within this ES, together with appropriate justification.

Table 15.2 Receptor/matters scoped into the assessment

Receptor/matter	Phase	Justification
Water quality	Construction and decommissioning	Construction and decommissioning activities can result in an increased risk of silt-laden runoff which in turn has the potential to degrade water quality within the receiving watercourses. This matter was proposed to be scoped out of further assessment within the

Receptor/matter	Phase	Justification
		Scoping Report but the Scoping Opinion has requested it be scoped in, as confirmed within the Scoping Opinion presented in **ES Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3]**.
Water resources	Construction and Operation (including maintenance)	As the requirements for water supply during construction and operational uses have the potential to increase the demand on water supplies, this matter requires further assessment and clarification. This matter was proposed to be scoped out of further assessment within the Scoping Report but the Scoping Opinion has requested it be scoped in, as confirmed within the Scoping Opinion presented in **ES Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3]**.
WFD waterbodies (Metheringham Beck)	Construction, operation (including maintenance) and decommissioning	As there is one WFD waterbody within the study area (Metheringham Beck), this waterbody was identified as a receptor which required further assessment and clarification. Construction and decommissioning activities can result in an increased risk of silt-laden runoff which in turn has the potential to degrade water quality within the receiving watercourses.. During the operational (including maintenance) phase, any surface water runoff from drainage components, as per the **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment [EN010149/APP/7.16]**), discharging to local watercourses will likely be within Metheringham Beck drainage catchment and should therefore consider the quality of water being discharged. This matter was proposed to be scoped out of further assessment within the

Receptor/matter	Phase	Justification
		Scoping Report but the Scoping Opinion has requested it be scoped in, as confirmed within the Scoping Opinion presented in **ES Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3]**. A **WFD Waterbodies Stage 1 Screening Technical Note (Appendix 15.1) ([EN010149/APP/6.3]** was submitted to the Environment Agency as per the guidance summarised by Figure 1 of the Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive **[Ref. 15-19]**. The Environment Agency concluded in response, as outlined in **ES Volume 3, Appendix 15.2: WFD Engagement [EN010149/APP/6.3]** to the Stage 1 Screening Technical Note this was a satisfactory level of assessment and a Stage 2 Scoping and Stage 3 Assessment would not be required given the distance from the Site, confirmation of no channel modifications and low risk from water quality degradation. This chapter provides further assessment on the significance of effect on Metheringham Beck.

Receptors/matters scoped out of the assessment

15.4.6. **Table 15.3** presents the receptors/matters that are scoped out of the assessment that are therefore not considered as part of this ES, together with appropriate justification.

Table 15.3 Receptor/matters scoped out of the assessment

Receptor/matter	Phase	Justification
Flood risk	Construction, operation (including maintenance)	Given the nature of the Site and the Proposed Development, and subject to ensuring no increase in flood risk and agreeing design and mitigation

Receptor/matter	Phase	Justification
	and decommissioning	measures with the Environment Agency, Lincolnshire County Council (the Lead Local Flood Authority), and the Witham First Internal Drainage Board, PINS agreed to scope this matter out of the EIA. However, a stand-alone **Flood Risk Assessment [EN010149/APP/7.16]** is submitted in support of the DCO Application.
Water quality	Operation (including maintenance)	Given the low potential for water quality degradation as a result of the Proposed Development, PINS did not request that water quality be scoped in for the operational (including maintenance) phase, with focus placed on the construction and decommissioning phases.
Water resources	Decommissioning	PINS agreed that water resources should be assessed in the ES where significant effects are likely to occur for the construction and operational (including maintenance) phases. Decommissioning will not have significant effects on water resources, given activities will be primarily the removal of equipment.

Establishing baseline conditions

Data sources to inform the EIA baseline characterisation

15.4.7. The following data sources have been used to understand the existing water baseline conditions:

- Flood Map for Planning **[Ref. 15-21]**;
- Risk of Flooding from Surface Water maps **[Ref. 15-22]**;
- Defra MAGIC Map (Drinking Water Safeguard Zone (Surface Water), Sites of Special Scientific Interest; Special Areas of Conservation, Special Protection Areas) **[Ref. 15-23]**;
- Statutory Main River Map **[Ref. 15-24]**;

- Catchment Data Explorer: Water environment and Water Framework Directive classifications **[Ref. 15-25]**;
- 1 metre LiDAR Digital Terrain Model **[Ref. 15-26]**;
- Ordnance Survey Mapping **[Ref. 15-27]**; and
- Environment Agency JFLOW data (national general flood modelling dataset)

Site visits/surveys

15.4.8. No site surveys have been required to inform the assessment of the receptors/matters scoped in relating to water resources and water quality which can be assessed via a desk based study. Following the submission of the a **WFD Waterbodies Stage 1 Screening Technical Note** (**Appendix 15.1 [EN010149/APP/6.3]**) to the Environment Agency, as outlined in the correspondence in **Table 15.1**, it was confirmed a WFD Stage 2 Scoping and Stage 3 Assessment would not be required by the Environment Agency as set out in **ES Volume 3, Appendix 15.2: WFD Engagement [EN010149/APP/6.3]**.

Approach to design flexibility

15.4.9. The Project Parameters, as outlined in **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1]**, **ES Volume 3, Appendix 3.1: Project Parameters [EN010149/APP/6.3]** and the parameter plans presented in **ES Volume 2, Figures 3.1 – 3.4 [EN010149/APP/6.2]**, set out the reasonable 'worst-case' parameters for the Proposed Development.

15.4.10. **ES Volume 1, Chapter 5: Approach to the EIA [EN010149/APP/6.1]** sets out those elements of the Proposed Development for which optionality is present within the design. The reasonable 'worst-case' scenario that has been assessed in this water chapter for each element of the Proposed Development where optionality is present within the design is outlined within **Table 15.4**.

Table 15.4 Reasonable worst-case scenario assessed for water

Project element	Reasonable worst case scenario that has been assessed
Battery Energy Storage System (BESS)	This assessment has considered the maximum parameters for the location of the BESS, Springwell Substation and Main Collector Compound as outlined in **ES Volume 2, Figure 3.1: Zonal Masterplan**
Springwell Substation	

Project element	Reasonable worst case scenario that has been assessed
Main Collector Compound	**[EN010149/APP/6.2]**, to ensure a worst case has been assessed. The assessment of the maximum parameters has been used as part of the **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment [EN010149/APP/7.16]**) to ensure that the proposed surface water drainage strategy has considered flood risk and water quality.
Balance of Solar System (BoSS) – Inverters	The inverters which form part of the BoSS would comprise either string inverters which are placed underneath the Solar PV modules or central inverters which are sited at regular intervals amongst the Solar PV modules. A hybrid scenario of both options is embedded into the design and considered for the assessment. The detailed list of each field and inverter type is detailed in **ES Volume 3, Appendix 3.1: Project Parameters [EN010149/APP/6.3]** and will be secured by the **Design Commitments [EN010149/APP/7.4]**. Where there is flexibility on the inverter type, this assessment has assumed Central Inverters which are proposed to sit mounted on a concrete plinth, The **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment [EN010149/APP/7.16]**) provides a drainage solution for the hardstanding associated within the concrete plinth to ensure that the proposed surface water drainage strategy has considered flood risk and water quality.
Construction Compounds	This assessment has considered the maximum parameters for the location of the construction compounds as identified in **ES Volume 2, Figure 3.10: Primary and Secondary Construction Compounds [EN010149/APP/6.2]**.
Satellite Collector Compounds	This assessment has considered the maximum parameters for the location of the Satellite Collector Compounds as outlined in **ES Volume 2, Figure 3.1:**

Project element	Reasonable worst case scenario that has been assessed
	Zonal Masterplan [EN010149/APP/6.2], to ensure a worst case has been assessed.
Cable routes	This assessment has considered the indicative cable route as presented in **ES Volume 2, Figure 3.9: Indicative Cable Crossing [EN010149/APP/6.2].**
Depth of foundations	The depth of foundations for Solar PV modules would be 1.5m to 3m, depending on ground conditions as outlined and secured in **ES Volume 3, Appendix 3.1: Project Parameters [EN010149/APP/6.3]**. This assessment assumes that the foundation depth would be 3m as this is considered the reasonable worst case.

Assessment assumptions

15.4.11. The assessment of the impact of the Proposed Development on the water environment (water quality and water resources) has been based on the assumptions set out in **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1]** and within the **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment [EN010149/APP/7.16]**).

Assessment methodology and criteria

15.4.12. This assessment identifies the likely significant effects on the identified receptors that have been scoped into the assessment following the EIA scoping and PEIR stages.

15.4.13. A desk-based study has been undertaken 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 (including maintenance) and decommissioning phases.

Sensitivity of the receptor

15.4.14. The criteria used for determining the sensitivity of the receptor in this assessment, based on professional judgement, are presented in **Table 15.5** below.

Table 15.5 Receptor sensitivity criteria

Sensitivity	Criteria
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance. In terms of hydrological receptors, this relates to: • A watercourse of National importance; • Areas of Flood Zone 3 or at high risk of surface water (or other forms of) flood risk; • WFD recorded watercourse achieving 'Good' or targeted as 'Good' status (including immediately downstream watercourses); • Regional sewer or water supply networks; • A flood plain or defence protecting between 1 and 100 residential properties or industrial premises from flooding; • Protected or designated areas, e.g. Sites of Special Scientific Interest, Ramsar sites, Special Protection Areas, Special Areas of Conservation, which are highly sensitive to disruption; and • Water stressed area.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance. In terms of hydrological receptors this relates to: • A watercourse of Countywide importance; • Areas of Flood Zone 2 or medium surface water flood risk; • WFD recorded watercourse achieving 'Moderate' or targeted as 'Moderate' status (including immediately downstream watercourses); and • Local sewer or water supply networks.
Low	The receptor is tolerant of change without detriment to its character, is of low environmental value, or local importance. In terms of hydrological receptors this relates to: • A watercourse of Local to District importance; • Areas of Flood Zone 1 or low surface water flood risk; • WFD recorded watercourse achieving 'Poor' or targeted as 'Poor' status (including immediately downstream watercourses); and

Sensitivity	Criteria
	• On-site sewer or water supply networks.

Magnitude of impact (change)

15.4.15. The criteria used for determining the magnitude of impact in this assessment are presented in **Table 15.6** below. These criteria are based on professional judgement and assessed using supporting evidence.

Table 15.6 Magnitude of impact criteria

Magnitude of impact	Criteria
High	Total loss or major alteration to key elements or features of the baseline conditions to the extent that post-development character or composition of baseline conditions will be fundamentally changed. (E.g. large increase or decrease in peak flood level, significant deterioration or improvement of water quality).
Medium	Loss or alteration to one or more key elements or features of the baseline conditions to the extent that post-development character or composition of the baseline conditions will be materially changed. (E.g. moderate increase or decrease in peak flood level, moderate deterioration or improvement of water quality).
Low	Minor shift away from baseline conditions. Changes arising will be detectable but not material; the underlying character or composition of the baseline conditions will be similar to the pre-development situation. (E.g. slight increase or decrease in peak flood level, slight deterioration or improvement of water quality).
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a 'no change' situation. (E.g. no discernible effects on hydrological elements (neither beneficial nor adverse).

Significance of effect

15.4.16. The determination of the significance of effect is achieved using the matrix presented in **Table 15.7**, based on professional judgement. Effects can be either adverse or beneficial.

Table 15.7 Significance of effect

Magnitude of impact	Sensitivity		
	High	**Medium**	**Low**
High	Major	Major/moderate	Moderate/minor
Medium	Major/moderate	Moderate	Minor
Low	Moderate/minor	Minor	Minor/negligible
Negligible	Negligible	Negligible	Negligible

15.4.17. The terms used within **Table 15.7** are defined as follows:

- Major adverse/beneficial effect: where the development will cause significant deterioration/improvement (respectively) to the existing environment.
- Moderate adverse/beneficial effect: where the development will cause noticeable deterioration/improvement (respectively) to the existing environment.
- Minor adverse/beneficial effect: where the development will cause perceptible deterioration/improvement (respectively) to the existing environment.
- Negligible: no discernible improvement or deterioration to the existing environment.

15.4.18. For the purposes of this assessment, **moderate** or **major** beneficial/adverse effects are deemed to be **significant**. **Minor** beneficial/adverse or **negligible** effects are deemed to be **not significant**.

15.4.19. Where the significance matrix indicates a range for the effect significance (e.g. 'moderate/minor'), professional judgement can be applied to select one option (which would be justified by evidence, as appropriate) or an effect significance range can be applied. If a significance of effect is assigned as 'moderate/minor', this would be considered significant unless further information could be provided to support and justify the significance effect as 'minor'.

15.5. Environmental baseline

Existing baseline

15.5.1. The following section presents a summary of the baseline conditions for the receptors scoped into the assessment, as identified within **Table 15.2**, which are water quality, water resources and WFD waterbodies (i.e. Metheringham Beck).

Watercourses and water quality

15.5.2. Several of the fields within the Order Limits are delineated by small field boundary drains/drainage ditches. The majority of these watercourses are unnamed and classified as Ordinary Watercourses (defined as a watercourse that does not form part of a Main River as per the Land Drainage Act 1991 **[Ref. 15-1**).

15.5.3. Springwell Beck is a Witham First Internal Drainage Board watercourse, which is located within the study area but outside of the Order Limits close to Field BCD108, as shown in **ES Volume 2, Figure 15.1: Watercourses and Water Receptors [EN010149/APP/6.2]**. The watercourse is under the jurisdiction of Witham First byelaws.

15.5.4. A limited area of the Site covering Fields Lf11, Lf10, Lf04, Lf03, By28, By27, BCD109 and BCD110 are within the Witham First Internal Drainage district. Although these are Ordinary Watercourses, Witham First Internal Drainage Board is the consenting authority for these watercourses.

15.5.5. In the existing baseline situation, it is likely that the watercourses within the study area are subject to limited inputs of pollutants, particularly nutrients, associated with farming activities and urban runoff given the nature of the predominantly agricultural land use of the surrounding catchment. However, as the sole WFD classified waterbody within the study area, Metheringham Beck, has a catchment area which predominantly covers the Site and study area with a ‘moderate’ overall physico-chemical quality elements and ecological quality, this suggests that these baseline sources of pollution have not significantly impacted water quality within the catchments under consideration.

15.5.6. For Ordinary Watercourses which are not WFD classified within the Order Limits and study area, given the straightened alignment and location of the watercourses at field boundaries, it is concluded that these watercourses are built for the purpose of field drainage and are heavily managed and influenced by surrounding agricultural practices, for the purpose of this assessment the water quality of these watercourses is classed as **low** sensitivity.

WFD waterbodies (Metheringham Beck)

15.5.7. Metheringham Beck is the only WFD classified waterbody within the study area.

15.5.8. The classified extents of Metheringham Beck are located outside of the Order Limits, approximately 100m north from Field By01, as shown in **ES Volume 2, Figure 15.1: Watercourses and Water Receptors [EN010149/APP/6.2]**. This waterbody is classified with a moderate ecological status under the WFD/River Basin Management Plan (Cycle 3 – 2022).

15.5.9. Baseline conditions of Metheringham Beck are outlined in **Table 15.8** below. The baseline conditions were obtained from the Environment Agency Catchment Data Explorer resource **[Ref. 15-25]**.

15.5.10. Reasons For Not Achieving Good Status for Metheringham Beck are outlined in **Table 15.9** below.

15.5.11. As Metheringham Beck is given a moderate ecological status, this WFD waterbody is classed as being of **medium** sensitivity.

Table 15.8 Metheringham Beck WFD waterbody classification status

Classification item	2016	2019	2022
Ecological	Moderate	Moderate	Moderate
Physico-chemical quality elements	N/A	Moderate	Moderate
Ammonia (Phys-Chem)	N/A	High	High
Biochemical Oxygen Demand (BOD)	N/A	High	High
Dissolved oxygen	N/A	Good	High
Phosphate	N/A	Poor	Poor
Temperature	N/A	n/a	High
pH	N/A	High	High
Hydromorphological Supporting Elements	Supports Good	Supports Good	Supports Good
Hydrological Regime	Supports Good	Supports Good	Supports Good

Classification item	2016	2019	2022
Supporting elements (Surface Water)	Moderate	Moderate	Moderate
Mitigation Measures Assessment	Moderate or Less	Moderate or Less	Moderate or Less

Table 15.9 Reasons for Not Achieving Good Status at Metheringham Beck

Significant water management issue	Activity	Category	Classification element
Point source	Sewage discharge (continuous)	Water Industry	Phosphate
Physical modification	Other	Agriculture and rural land management	Mitigation Measures Assessment
Physical modification	Other	Local and Central Government	Mitigation Measures Assessment
Measures delivered to address reason, awaiting recovery	Not applicable	No sector responsible	Mercury and Its Compounds
Measures delivered to address reason, awaiting recovery	Not applicable	No sector responsible	Polybrominated diphenyl ethers (PBDE)

Water Resources

15.5.12. The Water Stress Map **[Ref. 15-28]**, produced by the Environment Agency and published 1 July 2021, identifies the Site within an area deemed seriously water stressed, where water resources are being or are likely to be exploited to a degree which may result in pressure on the environment or water supplies both now and in future. The Site is shown on the map as within Area 2 – Anglian Water, with a 'serious' classification. Given the weighting of importance that Anglian Water and the Environment Agency have placed on water resources, for the purpose of this assessment the Site has been classified as **high** sensitivity.

Future baseline in the absence of the Proposed Development

15.5.13. The future baseline of water quality within the study area in the absence of the Proposed Development is unlikely to change from the existing baseline. No significant changes in agricultural practices are anticipated; there is nothing to indicate that water quality will change for Ordinary Watercourses within the study area in the absence of the Proposed Development.

15.5.14. Metheringham Beck does not currently achieve a good status due to the presence of a sewage discharge from the nearby sewage treatment works introducing point source phosphate pollution, as well as surrounding agricultural management practices. Metheringham sewage treatment works is identified within the Witham catchment programme appraisal of the Anglian Water Drainage and Wastewater Management Plan Technical Report **[Ref. 15-29]**. The medium term and 2050 strategy is to increase the process capacity of the treatment works, no further information is provided. An increased process capacity by 2050 may reduce the phosphate pollution identified in the Water Framework Directive Reason For Not Achieving Good Status (as per the classification elements in **Table 15.9**). A reduction in phosphate may lead to the waterbody achieving a 'Good' status, though this is on the assumption the process capacity upgrade works are undertaken. There is nothing further to indicate that Metheringham Beck will achieve a status that differs from the current rating in the absence of the Proposed Development.

15.5.15. Future climate change projections indicate that drier summers can be anticipated across the UK; the Anglian Water Water Resources Management Plan 2024 **[Ref. 15-30]** indicates Anglian Water will have 10 million litres per day less available water as a result of climate change. Anglian Water hope to balance this by targeting future reductions in demand in water through household water efficiency solutions, minimising leakages and non-household demand management options. Anglian Water forecasts that despite population growth from 4.695 million to 5.435 million by 2038, an 18.5% reduction in water use per head can be achieved leading to an overall decrease in 5.7% in water demand and an 8% reduction in demand from non-household uses. It is likely that the area will remain with a 'serious' classification with regards to water stress as a result of climate change.

15.6. Mitigation embedded into the design

15.6.1. This assessment has been based on the principle that measures have been 'embedded' into the design of the Proposed Development to remove potential significant effects as far as practicable, for example by the considered placement of infrastructure. **ES Volume 1**, **Chapter 3: Proposed Development Description [EN010149/APP/6.1]** and **ES Volume 3**, **Appendix 3.1: Project Parameters [EN010149/APP/6.3]** and

the Design Commitments which form part of the **Design Approach Document [EN010149/APP/7.3]** identify measures that has been embedded into the design of the Proposed Development. The embedded mitigation relevant to this assessment is detailed in **Table 15.10** below.

Table 15.10 Embedded mitigation relevant to water

Embedded mitigation measure relevant to water	Function	Securing mechanism
Perimeter fencing surrounding the Solar PV development will be offset at least 6m either side from all existing ditches where crossing is not required.	The proposed offset provides a buffer for any sediment entrained within surface water runoff where sediment can deposit. The proposed offset ensures no erosion of the banking of the watercourses which could result in degradation of water quality.	**Design Commitments [EN010149/APP/7.4]**
Outline Drainage Strategy	The recommendations set out in the **Outline Drainage Strategy [EN010149/APP/7.16]** include that all SuDS features to be designed in accordance with the CIRIA C753 SuDS Manual **[Ref. 15-31]**, to ensure that surface water runoff discharged from the Site will be of an acceptable standard by following best design practices. As part of the embedded mitigation, the **Outline Drainage Strategy [EN010149/APP/7.16]**details the principles for ensuring firewater runoff is retained within BESS compound and will not enter the wider environment.	**Outline Drainage Strategy [EN010149/APP/7.16]**
Vegetation management	Vegetation below the Solar PV modules will ensure the kinetic energy from rainfall runoff dripping from the panel lip will be dispersed and reduce the risk of soil erosion. Vegetation will	**Outline Landscape and Ecology Management Plan [EN010149/APP/7.9]**

Embedded mitigation measure relevant to water	Function	Securing mechanism
	improve soil stability during the operational phase.	

15.7. Assessment of likely effects (without additional mitigation)

Construction and decommissioning

15.7.1. Construction and decommissioning activities including topsoil stripping and stockpiling of material, establishment of construction compounds and access tracks, reprofiling and vegetation clearance will have the potential to result in silt-laden runoff arising from construction activities on Site, resulting in the sedimentation and pollution of watercourses. This could significantly degrade the water quality of surface water runoff leaving the Site.

15.7.2. Any silt-laden runoff which could enter the watercourses within the Order Limits may ultimately be transported within the channel flow towards off site watercourses including Metheringham Beck. Increased silt mobilisation may temporarily reduce the water quality of Metheringham Beck.

15.7.3. Construction and decommissioning activities have the potential to lead to spillages and leaks of fuels, oils and chemicals. This could have effects on the water quality of local watercourses if spilled directly into the water or allowed to runoff towards watercourses during rainfall events.

15.7.4. During construction, there is likely to be increased demand on water resources compared to the existing scenario as potable water will be required for the staff on site for the duration of the construction and raw (non-potable) water required for construction activities such as dust suppression and occasional concrete hand mixing. These requirements on water resources would be temporary and not intensive.

Operation (including maintenance)

15.7.5. Due to the nature of the Proposed Development, there is a low likelihood that during the operational (including maintenance) phase the water quality would be degraded at Metheringham Beck. Once vegetation is established below Solar PV modules, this will support the stabilisation of soils which will be less prone to the erosional forces of rainfall runoff.

15.7.6. The **Outline Drainage Strategy** (which forms an appendix of the **Flood Risk Assessment [EN010149/APP/7.16]**) recommends that rainfall runoff from large areas of hardstanding - including the BESS and Springwell Substation - is drained to SuDS which are designed in accordance with the CIRIA C753 SuDS Manual **[Ref. 15-31]**. This would ensure the quality of any surface water discharged to Metheringham Beck will be of an acceptable quality.

15.7.7. The BESS design will include the use of impermeable membranes and a bung and penstock system to prevent surface water discharge of firewater runoff in the unlikely event of fire. This will prevent contaminated runoff entering the wider hydrological environment.

15.7.8. During the operational (including maintenance) phase, potable water is expected to be supplied to the welfare facilities at the BESS location via Anglian Water mains (as agreed within the **Statement of Common Ground - Anglian Water Services Ltd [EN010149/APP/7.21]**. The potable water will be used for the welfare facility purposes only. As there are expected to be no more than 24 staff daily within the welfare facilities then the increased demand on potable water will be negligible. Assuming the water usage per staff member is 145 litres per day (based on typical usage guidance), then it is assumed water usage could reach 3,480 litres per day.

15.7.9. During the operational (including maintenance) phase, non-potable water will be required for cleaning; it is expected for uses of non-potable water resources it can be supplied from sources such as rainwater harvesting. rainwater harvesting will be the preferred supply of non-potable water as per the **Statement of Common Ground - Anglian Water Services Ltd [EN010149/APP/7.21]**.

15.8. Additional mitigation

Construction and decommissioning

15.8.1. Water quality during construction and decommissioning phases will be effectively protected by appropriate control measures and any adverse effects will be greatly reduced or eliminated. The mitigation measures outlined below will be used to protect water quality during the construction and decommissioning phases. Mitigation measures are documented within and will be secured by the **Outline Construction Environmental Management Plan (oCEMP) [EN010149/APP/7.7]** and **Outline Decommissioning Environmental Management Plan (oDEMP) [EN010149/APP/7.13]**, which are submitted in support of the DCO Application.

15.8.2. The protection of water quality will be focused on reducing the mobilisation of silt and pollutant chemicals from entering watercourses, usually via

rainfall runoff. A summary of the pollution prevention management measures in the **oCEMP [EN010149/APP/7.7]** (and also in the **oDEMP [EN010149/APP/7.13]**) are outlined below:

- No vehicle, equipment or material storage is permitted within the Flood Zone 2 or Flood Zone 3 or within 20m of watercourses where practicable.
- The placement of stockpiled materials as far away as practically possible from sensitive receptors (including watercourses).
- Vegetation removal is undertaken on a phase-by-phase basis to avoid excessive exposure of bare soil.
- Silt fencing or straw bales to be placed downslope of construction works to prevent silt entering watercourses.
- Additional silt fencing kept on site for deployment at short notice.
- A wheel wash at the site access to reduce silt migration across the Site.
- Vehicles to be inspected at the start of each day, and vehicles showing signs of fuel/oil drips, missing fuel caps, or damaged hydraulics will be rejected and not used on Site before repair.
- Fuels will be stored in a double skinned locked and bunded fuel bowser as far away from watercourses as reasonably practicable. Refuelling will be carried out over a drip tray. These will be regularly maintained and inspected for rainwater. Rainwater will be removed by specialist removal. A spill kit will be located next to any bowser.
- Spill kits will contain as a minimum: spill booms, granules, mats and gully covers.
- If groundwater pumping is necessary for excavations, the wastewater must be disposed of in accordance with Environment Agency guidance.
- All surface waters and drains must be protected from silt runoff using gully guards, straw bales, gravel traps or silt fencing. These measures must be inspected daily.
- Adherence to the HDD Fluid Breakout Plan as detailed and secured in the **oCEMP [EN010149/APP/7.7].**

15.8.3. Potable water requirements for temporary welfare facilities during the construction and decommissioning phases are to be met by bringing in potable water using a bowser. The welfare facilities that will be included as part of the Project Substation will have a mains supply and once constructed will be used for worker welfare during the construction phase.

15.8.4. Non-potable water required during construction will be provided by Rainwater harvesting as a preference were practicable as per preferences for non-potable water supply outlined in the **Statement of Common Ground - Anglian Water Services Ltd [EN010149/APP/7.21]**.

15.8.5. Potential non-potable water usage during the construction phase may include some mixing of concrete for smaller works like curbing, post setting and brickwork. However, overall the non-potable water usage within the Site will be reduced by importing pre-mixed concrete into the Site for construction for those activities where it is required.

Operation (including maintenance)

15.8.6. The operational (including maintenance) phase will not increase the risk of pollution discharge to watercourses and degrading water quality at Metheringham Beck during operations will be relatively low risk. However, best practice mitigation measures will further reduce any residual effects on water quality and are outlined and secured within an **Outline Operational Environmental Management Plan (oOEMP) [EN010149/APP/7.10]**, which is submitted in support of the DCO Application. Examples of mitigation measures included in the oOEMP to protect water quality include an emergency spillage action plan.

15.8.7. Anglian Water potable mains water supplies are proposed be utilised for welfare facilities during the operational (including maintenance) phase, the welfare facilities will be located at the Project Substation. Daily welfare facility usage of potable water is assumed for up to 24 people maximum. The Proposed Development would not pose an unreasonable additional strain on potable water resources. This relatively small potable water usage is considered to have a negligible impact on Anglian Water resources. The number of working staff is detailed with the outline **oOEMP [EN010149/APP/7.10]**. The potable water supply for welfare facilities is agreed with Anglian Water as per the **Statement of Common Ground - Anglian Water Services Ltd [EN010149/APP/7.21].**

15.8.8. A supply of non-potable water is proposed to be provided to the Proposed Development via rainwater harvesting as the preferred option of supply where practicable. By not using Anglian Water potable water mains supplies for non-welfare uses, this ensures the Proposed Development will have minimal impact on potable water supplies. The preferences for non-potable water supply during the operational phase has been outlined in the **Statement of Common Ground - Anglian Water Services Ltd [EN010149/APP/7.21]** and agreed with Anglian Water, this outlines that the preference is to use rainwater harvesting.

15.8.9. Maintenance activities (such as cleaning) that require the use of non-potable water will use non-potable water from rainwater harvesting sources where practicable or brought into the Site using a bowser. Cleaning of solar panels will be undertaken using demineralised water which can be supplied either via bowser from offsite sources or filtered from rainwater harvesting water supplies on site;

15.8.10. Additionally, as demineralised water is used for the cleaning of solar panels then no harmful cleaning product will enter the environment.

15.8.11. Current design allows for fire water tanks, these are to be filled via supply from a bowser brought to the Site.

15.8.12. The foul water drainage for welfare facilities is to be provided via package treatment works or cesspits. The **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk Assessment [EN010149/APP/7.16]**) confirms that foul water drainage will not drain to foul or combined sewers, and will instead drain to a package treatment works or cesspits within the Site which will be managed and drained by a licensed courier, this is subject to detailed design of the foul water utilities.

15.9. Assessment of residual effects (with additional mitigation)

Construction and decommissioning

15.9.1. Metheringham Beck, as a WFD classified waterbody with a moderate ecological status, is considered to be of **medium** sensitivity. The magnitude of impact following additional mitigation is considered to be **negligible** because it is shown through the additional mitigation measures provided in the **oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]** that the degradation of water quality within the waterbody can be prevented. Furthermore, there are no plans to change the waterbody as it is outside of the Order Limits. Therefore, the significance of effect is considered to be **negligible** and **not significant**.

15.9.2. In terms of water quality, the watercourses within the Site and study area are considered to be of low sensitivity. The magnitude of impact following additional mitigation is considered to be **negligible** because it is shown through the mitigation measures provided in the **oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]** that the degradation of water quality within watercourses can be prevented. Therefore, the significance of effect is considered to be **negligible** and **not significant**.

15.9.3. The sensitivity of the water resources within the Site and study area is considered to be high. The magnitude of impact following additional mitigation is considered to be negligible as there is an assumption that Anglian Water potable water supplies will not be used for the construction and decommissioning activities. Furthermore, as concrete will be premixed when brought to the Site, this will reduce the water demand required. Therefore, the significance of effect is considered to be **negligible** and **not significant**.

Operation (including maintenance)

15.9.4. Metheringham Beck, as a WFD classified waterbody with a moderate ecological status, is considered to be of medium sensitivity. The magnitude of impact following additional mitigation is considered to be **negligible** because the operational (including maintenance) phase of the Proposed Development will not result in an increased risk of pollutant discharge to watercourses within the WFD classified watercourse catchment. Mitigation measures such as emergency spillage plans as outlined in the **oOEMP [EN010149/APP/7.10]** will reduce the residual risks. Therefore, the significance of effect is considered to be **negligible** and **not significant**.

15.9.5. The sensitivity of the water resources within the Site and study area is considered to be high. The magnitude of impact following additional mitigation is considered to be negligible due to the reasoning that the potable water demands on the Anglian Water mains supply will be limited to a relatively small usage for the welfare facilities supply, whilst rainwater harvesting supply will be the preferred options for supply for non-potable water usage. Therefore, the significance of effect is considered to be **negligible** and **not significant**.

15.10. Opportunities for enhancement

15.10.1. The Proposed Development is based on a clean energy source. There are considered to be some limited opportunities for environmental enhancement specifically related to flood risk and water quality associated with the Proposed Development; these are outlined in the paragraphs below.

15.10.2. The **Outline Drainage Strategy** (which forms an appendix of the **Flood Risk Assessment [EN010149/APP/7.16]**) for areas of proposed hardstanding will capture surface water runoff from these areas and will be discharged back into the environment and limited to greenfield runoff rates (typically the 1 in 1 year rate or the mean annual maximum flow rate (referred to as QBAR and is equivalent to the 1 in 2.3 year return period)). This means that, for rainfall events greater than the QBAR event, there is a reduction in the peak rates of surface water runoff leaving the Site compared to the baseline scenario. The resulting effect is flood risk may theoretically be reduced within the catchment as a result of measures brought about through the Proposed Development.

15.10.3. Furthermore, the provision of vegetation cover (for the duration of the operational (including maintenance) phase) below the Solar PV modules will help slow the rate of surface water runoff from the Site during high intensity rainfall events and promote the interception of surface water runoff. This will result in a potential reductions in the rate of surface water runoff compared to the baseline scenario, as agricultural practices will

periodically result in bare vegetation ground cover and exposed soils which can potentially increase the rate of surface water runoff. Furthermore, linear depressions caused by the repeated movement of agricultural vehicles over the soil can also increase the velocity in which surface water leaves the Site and potentially increase peak runoff rates.

15.10.4. The cessation of arable agricultural activities will also result in a reduction of the application of pesticides, herbicides and fertilisers within the Site. In turn, the vegetation cover will stabilise soils and reduce the mobilisation of these materials.

15.11. Monitoring requirements

15.11.1. There are no significant adverse residual effects identified, therefore there is no requirement for monitoring of the receptors assessed within this chapter. However, it would be best practice to monitor the effectiveness of silt management works during the construction and decommissioning phases, particularly immediately following prolonged periods of rainfall to ensure silt-laden runoff has not entered the watercourse. This is detailed and secured in the **oCEMP [EN010149/APP/7.7]**.

15.12. Difficulties and uncertainties

15.12.1. The following difficulties and uncertainties have been encountered in undertaking the water assessment:

- There is uncertainty regarding the confirmation of whether the welfare facilities will be water mains fed or whether a bowser can supply the potable water.
- The volume of raw water required for the construction, decommissioning and operational (including maintenance) phases is not currently known. Raw water for non-welfare activities will not be sourced from the Anglian Water mains supply; associated traffic movements have been considered within **ES Volume 1, Chapter 14: Traffic and Transport [EN01049/APP/6.1]**.

15.13. Summary

15.13.1. A summary of this assessment is presented in **Table 15.11**. The sensitivity of each receptor is identified alongside any relevant embedded mitigation and the potential effects that could arise on those receptors. Any proposed additional mitigation measures are stated, and the magnitude of impact and residual effects then assessed. Finally, any monitoring requirements are stated where applicable.

Table 15.11 Assessment summary

Receptor	Sensitivity	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Magnitude of impact	Residual effect (with additional mitigation)	Monitoring requirement
Key: + = positive, - = negative, D = direct, I = indirect, ST = short-term, MT = medium-term, LT = long-term, P = Permanent, T = temporary							
Water quality of watercourses	Low	Vegetation management to stabilise soils and reduce silt laden rainfall runoff.	Risk of silt-laden runoff following rainfall during the construction and decommissioning phases.	**oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]** will be implemented to ensure silt laden runoff and pollutants are prevented from entering watercourses.	Negligible	**Negligible (-)(I)(ST)(T) Not significant**	N/A
Water resources	High	N/A	Water supplies required during the construction and decommissioning	Non-potable water uses is to be supplied via either rainwater harvesting where practicable or	Negligible	**Negligible (-)(D)(LT)(P)**	N/A

Receptor	Sensitivity	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Magnitude of impact	Residual effect (with additional mitigation)	Monitoring requirement
			phases may increase water demands.	brought to the site via a bowser.		**Not significant**	
WFD waterbody - Metheringham Beck	Medium	Vegetation management to stabilise soils and reduce silt laden rainfall runoff. Measures such as incorporation of Suds within **Outline Drainage Strategy** (which forms an appendix to the **Flood Risk**	Risk of silt-laden runoff following rainfall during the construction and decommissioning phases.	**oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]** will be implemented to ensure silt laden runoff and pollutants are prevented from entering watercourses.	Negligible	**Negligible (-)(I)(ST)(T) Not significant**	N/A

Receptor	Sensitivity	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Magnitude of impact	Residual effect (with additional mitigation)	Monitoring requirement
		Assessment [EN010149/APP/7.16]) to manage pollutants.					

15.14. References

- **Ref**. **15-1**: Land Drainage Act 1991. Available online: https://www.legislation.gov.uk/ukpga/1991/59/contents
- **Ref. 15-2**: The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Available online: https://www.legislation.gov.uk/uksi/2017/407/contents/made
- **Ref. 15-3**: Flood and Water Management Act 2010. Available online: https://www.legislation.gov.uk/ukpga/2010/29/contents
- **Ref. 15-4**: Water Act 2003. Available online: https://www.legislation.gov.uk/ukpga/2003/37/contents
- **Ref. 15-5**: Water Resources Act 1991. Available online: https://www.legislation.gov.uk/ukpga/1991/57/contents
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- **Ref 15-11**: Retained EU Law (Revocation and Reform) Act 2023. Available online: https://www.legislation.gov.uk/ukpga/2023/28/contents
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- **Ref. 15-16**: Department for Ministry of Housing, Communities and Local Government and Levelling Up, Housing and Communities, 'National Planning Policy Framework', published 27 March 2012, updated 5 September 2023. Available online: National Planning Policy Framework - GOV.UK (www.gov.uk)
- **Ref 15-17**: Department for Levelling Up, Housing and Communities (2022) Flood Risk and Coastal Change Planning Practice Guidance. Available online: https://www.gov.uk/guidance/flood-risk-and-coastal-change
- **Ref. 15-18**: Central Lincolnshire Adopted Local Plan (2023). Available online: https://www.n-kesteven.gov.uk/central-lincolnshire/adopted-local-plan-2023
- **Ref. 15-19**: Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (September 2024). Available online: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-the-water-framework-directive
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