EAST PARK ENERGY

East Park Energy

EN010141

Environmental Statement
Volume 1 – Main Report

Chapter 8: Hydrology and Flood Risk

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Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009: Regulation 5(2)(a)

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EAST PARK ENERGY

Planning Act 2008

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Environmental Statement
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Chapter 8: Hydrology and Flood Risk

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8.0 HYDROLOGY AND FLOOD RISK

8.1 Introduction

8.1.1 This chapter presents the findings of an assessment of the likely hydrological and flood risk effects arising from the construction, operation and decommissioning of the East Park Energy project ('the Scheme').

8.1.2 This chapter summarises the relevant regulatory and policy framework, provides details of consultations with public bodies and responses to these, details the methodology followed for the assessment and describes the existing baseline environment in the area surrounding the Scheme. Following this, the design, mitigation and residual effects of the Scheme are discussed, along with inherent limitations within the assessment.

8.1.3 Hydrology and flood risk aspects considered within the chapter for the Scheme include:

- Effects to water quality due to the Scheme on surface water, groundwater, designated sites and water abstractions; and
- Fluvial flood risk and surface water drainage.

8.1.4 This chapter is supported by the following appendices in **ES Volume 2 [EN010141/DR/6.2]**:

- **ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.2]**; and
- **ES Vol 2 Appendix 8-2: WFD Assessment [EN010141/DR/6.2]** and
- **ES Vol 2 Appendix 8-3: Watercourse Crossing Assessment [EN010141/DR/6.2]**.

8.1.5 This chapter is supported by the following figures in **ES Volume 3 [EN010141/DR/6.3]**:

- **ES Vol 3 Figure 8-1: Watercourses [EN010141/DR/6.3]**;

- **ES Vol 3 Figure 8-2: Environment Agency Fluvial Flood Map [EN010141/DR/6.3]**;
- **ES Vol 3 Figure 8-3: Modelled Flood Levels (0.1% AEP) [EN010141/DR/6.3]**;
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- **ES Vol 3 Figure 8-10: Aquifer Designation Mapping [EN010141/DR/6.3]**

Statement of Competence

8.1.6 The hydrology and flood risk chapter lead holds a BSc (Hons) in Geology and an MSc in Engineering Hydrology, has 30 years' experience as a hydrologist managing the delivery of multi--9disciplinary projects and technical reporting for hydrology assessments for Environmental Impact Assessment (EIA). They are a specialist in hydrology and hydrogeology, are a Chartered Geologist (CGeol) and also a registered Specialist in Land Condition (SiLC).

8.1.7 The deputy author holds a MSc and is a Chartered Member of the Chartered Institute of Water and Environmental Management (CIWEM). They hold 7 years' experience specialising in flood risk management and water infrastructure. They have experience authoring and leading on the preparation of Flood Risk Assessments (FRAs) for EIA and have prepared numerous FRAs for solar farm projects.

8.2 Legislation, Policy and Guidance

8.2.1 The relevant legislation, planning policy and guidelines which underpin the assessment methodology for hydrology and flood risk and inform the scope of the assessment are outlined in this section.

Legislation

8.2.2 The Water Framework Directive (2000/60/EC) (WFD), has the main objectives of protecting, enhancing and restoring Europe's waters, with the aim of achieving 'good' status, establishing a baseline of no deterioration and encouraging the sustainable use of water resources and the water environment. This directive resulted in the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003, which transposed the WFD into law in England and Wales and provided a timetable for its implementation (since replaced by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017).

8.2.3 Where relevant, the assessment takes into account the legislative protection afforded to water resources. The main national legal and policy framework is set by the following:

- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017**Error! Bookmark not defined.**, implements the WFD into law in England and Wales; these regulations aim to prevent the deterioration of aquatic ecosystems and to protect, enhance and restore water bodies to 'good' status by requiring the creation of River Basin Management Plans (RBMPs);';
- Water Act 2003[1] promotes sustainable water use and encourages water conservation (in addition to other consumer and commercial interests);
- Water Act 2014[2] further promotes measures to make water resources more resilient to natural hazards such as droughts and floods (in addition to other consumer and commercial interests);

- Land Drainage Act 1991[3] defines roles and responsibilities for various authorities and landowners including maintaining the bed and banks of watercourses, keeping watercourses clear of obstructions and not using watercourses for the disposal of waste; in essence the act is a cornerstone of flood risk management;
- Water Industry Act 1991[4] consolidated previous legislation to regulate the privatised water and sewerage industry and their duties in regard to the use of water resources;
- Water Resources Act 1991[5] regulates water resources, water quality and flood defence in England and Wales; it establishes a licensing system for abstracting and impounding water, sets out a basis for addressing water pollution and defines the powers of the Environment Agency (EA);
- Environmental Permitting (England and Wales) Regulations 2016[6] require activities that could harm the water environment, such as discharging wastewater into rivers or groundwater, to be permitted; the regulations establish a single permitting structure for such activities and create a legal offence for operating without a permit;
- Control of Pollution (Oil Storage) (England) Regulations 2001[7] is designed to prevent environmental harm from oil spills; it mandates provision for secondary containment such as bunds or drip trays, the strength of containers, the placement of tanks and the proper management of pipes and valves;
- Environmental Damage (Prevention and Remediation) Regulations 2015[8] enshrines the 'polluter pays' principle in legislation for serious harm to land, water, protected species and habitats;

Water Quality Standards and Objectives

8.2.4 The water quality of England's rivers is classified by the EA, which has developed a classification scheme for surface waters following the requirements of the WFD, as part of its RBMPs.

8.2.5 The classification scheme assesses the condition of each river, lake, estuary and coastal water and assigns it a 'status' from high, good, moderate, poor to bad. If a water body is classified as high or good status, then it has a healthy ecology which may deviate only slightly from natural conditions. Such a water body is an important natural heritage asset and can support a wide range of uses such as recreation, fishing and drinking water supply. If a water body is classified as moderate, poor or bad, then the ecology is adversely affected and the range of uses which can be supported is reduced.

8.2.6 As part of the RBMPs, water body data is published by the EA containing details of the current water body classification, current pressures on the water body, measures to address these and classification objectives for 2021 and 2027.

Planning Policy

8.2.7 The following national and local policies of relevance have been considered:

National Policy

8.2.8 The following National Policy Statements (NPSs) set out national planning policies in relation to nationally significant solar photovoltaic generation developments and electricity networks:

- Overarching NPS for Energy (EN-1)[9]; and
- NPS for Renewable Energy Infrastructure (EN-3)[10];
- NPS for Electricity Networks Infrastructure (EN-5)[11].

8.2.9 Although it is relevant to the Scheme, the NPS for Electricity Networks Infrastructure (EN-5) identifies hydrology as one of several environmental topics that must be considered and therefore provides only limited direction concerning hydrology itself. More specific direction is given in EN-1 and EN-3 as described below in Table 8.1.

8.2.10 The National Planning Policy Framework (NPPF)[12], and the accompanying online Planning Practice Guidance (PPG)[13] (Flood Risk and Coastal Change)

are also important and relevant but are not the principal policy documents against which the application will be determined.

8.2.11 Relevant sections of the above policies in relation to hydrology and flood risk are:

Table 8.1 Summary of National Planning Policy

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
NPS EN-1	Section 4.12 (Pollution Control and Other Environmental Regulatory Regimes)	Applicants should make early contact with relevant regulators, including the EA or Natural Resources Wales (NRW) and/or the Marine Management Organisation (MMO), to discuss their requirements for Environmental Permits and other consents.	Reference to application of permits for protection of watercourse crossings on Main and Ordinary Watercourses is made within **ES Vol 2 Appendix 8-3 [EN010141/DR/6.2]**. Appropriate abstraction licence for water supplies is referenced in Section 8
	Section 5.8 (Flood Risk)	The applicant should have regard for the impact of all forms of flooding on the Proposed Development and the impact of climate change on flood risk. Development should be designed to ensure there is no increase in flood risk elsewhere, accounting for the predicted impacts of climate change throughout the lifetime of the development. A site specific Flood Risk Assessment (FRA) should be produced for all sites >1Ha and should include an assessment of how the development will impact upon existing drainage.	Site specific FRA has been produced as **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]** which considers existing and future flood risk at the Site and how there will be no increase in either case due to the Scheme. Climate change allowances are applied to ensure that there will be no future increase in flood risk on the Site or elsewhere.
	Section 5.16 (Water Quality and Water Resources)	Where the project is likely to have effects on the water environment, the applicant should undertake an assessment of the existing status of, and impacts of the proposed project on, water quality, water resources and physical	WFD assessment provided as **ES Vol 2 Appendix 8-2 [EN010141/DR/6.2]** assesses the current state of nearby water bodies, as

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		characteristics of the water environment, and how this might change due to the impact of climate change on rainfall patterns and consequently water availability across the water environment, as part of the ES or equivalent Where possible, applicants are encouraged to manage surface water during construction by treating surface water runoff from exposed topsoil prior to discharging and to limit the discharge of suspended solids The ES should in particular describe: a) the existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges b) existing water resources affected by the proposed project and the impacts of the proposed project on water resources, noting any relevant existing abstraction rates, proposed new abstraction rates and proposed changes to abstraction rates (including any impact on or use of mains supplies and reference to Abstraction Licensing Strategies) and also demonstrate how proposals minimise the use of water resources and water consumption in the first instance c) existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project and any impact of physical modifications to these characteristics d) any impacts of the proposed project on water bodies or protected areas (including shellfish protected areas) under the Water Environment (Water Framework	summarised in Section 8.6. The likely effects on these water bodies as a result of the Scheme, including water resources, water use and designated sites, is provided in Section 8.8. Cumulative effects described in Section 8.11.

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		Directive) (England and Wales) Regulations 2017 and source protection zones (SPZs) around potable groundwater abstractions e) how climate change could impact any of the above in the future f) any cumulative effects	
NPS EN-3	Section 2.4.11	Solar photovoltaic (PV) sites may also be proposed in low lying exposed sites. For these proposals, applicants should consider, in particular, how plant will be resilient to increased risk of flooding.	Site specific FRA has been produced as **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]** which considers existing and future (climate change allowances applied) flood risk at the Site.
	2.10.84	Where a Flood Risk Assessment has been carried out this must be submitted alongside the applicant's ES. This will need to consider the impact of drainage. As solar PV panels will drain to the existing ground, the impact will not, in general, be significant	See above for FRA details. An **outline Surface Water Management Plan (oSWMP) [EN010141/DR/7.13]** has been prepared which discusses impact on drainage and SuDS to be implemented to manage surface water. This is a control document and will be secured by the DCO.
	2.10.85	Where access tracks need to be provided, permeable tracks should be used, and localised Sustainable Drainage Systems (SuDS), such as swales and infiltration trenches, should be used to control any run-off where recommended.	Except where required to large or heavily trafficked roads, permeable tracks will be used around Site and appropriate SuDS prescribed for these within the **oSWMP [EN010141/DR/7.13.**
	2.10.88	Where culverting for access is unavoidable, applicants should demonstrate that no reasonable alternatives exist and where necessary it will only be in place	Watercourse Crossing Assessment provided as **ES Vol 2 Appendix 8-3**

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		temporarily for the construction period.	**[EN010141/DR/6.2]** which describes each crossing option chosen, merited by location.
NPPF	Paragraph. 162	Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk	Climate change considered in development plans within **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]** and **oSWMP [EN010141/DR/7.13]**.
	Paragraph. 170	Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.	Section 8.7 Embedded Mitigation and Enhancement Measures, describes how development has been directed away from areas at higher risk of flooding, This is a key part of ensuring that there will be no increase in flood risk elsewhere, by ensuring that flood risk due to the Scheme is managed within the Site.
	Paragraph. 172	All plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property	As above in Section 8.7 and within **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**.
	Paragraph. 182	Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements	SuDS measures outlined in the **oSWMP [EN010141/DR/7.13].** This is a control document and will be secured by the DCO.

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should: a) take account of advice from the Lead Local Flood Authority; b) have appropriate proposed minimum operational standards; and c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development.	
	187	Planning policies and decisions should contribute to and enhance the natural and local environment by: preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.'	Construction effects on hydrology and hydrogeology widely discussed within ES (Sections 8.8) and the **outline Construction Environmental Management Plan (oCEMP) [EN010141/DR/7.3]**. Also see **ES Vol 2 Appendix 8-2 [EN010141/DR/7.13]** for assessment of impacts on WFD classifications.
PPG (Flood Risk & Coastal Change)		PPG provides various pieces of guidance, including: a) Guidance on works in proximity to watercourses b) Application of the 'sequential test' and 'exception test' (which must be applied to steer development to areas with the lowest probability of flooding) c) Consideration and types of SuDS for new developments where required as per paragraph 182 of NPPF.	PPG direction is addressed as described below: a) See embedded mitigations on working near watercourses outlined in Section 8.7. b) See FRA in **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**. See also **oSWMP [EN010141/DR/7.13]**

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		d) Guidance on Natural Flood Management (NFM), flood resilience and resistance measures which should be considered in certain circumstances	c&d) NFM measures illustrated in **ES Vol 3 Figure 2-1 [EN010141/DR/6.3]**. c&d) Resilience is discussed in the FRA at **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**.

Local Policy

8.2.12 The Scheme lies within the administrative boundaries of Bedford Borough Council (BBC) and Huntingdonshire District Council (HDC), with HDC being a two-tier authority with Cambridgeshire County Council (CCC). The following plans have been reviewed and those considered relevant to hydrology and flood risk are described in Table 8.2:

- Bedford Borough Local Plan 2030[14];
- Huntingdonshire Local Plan to 2036[15];
- Great Staughton Neighbourhood Plan 2021 to 2036[16];
- The Huntingdonshire Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA)[17]; and
- Bedford Borough Council Level 2 Strategic Flood Risk Assessment (SFRA)[18].

8.2.13 Relevant local planning policies from the above documents are summarised in Table 8.2.

Table 8.2 - Local Plan Policies

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
Huntingdonshire Local Plan to 2036	Local Plan (LP) 5 – Flood Risk	a) The location of development will only be supported where all forms of flood risk, including breaches of flood defences or other defence failures, have been addressed as detailed in PPG and in reference to the Cambridgeshire Flood and Water Supplementary Planning Document (SPD)[19]. b) Where a proposal is considered to be acceptable within the 1% annual probability flood extent (Flood Zone 3), including an allowance for climate change for the lifetime of the development, the development must not result in a loss of flood storage capacity, reduce flow performance, increase rate of flooding onset or result in an unsustainable form of flood storage requiring on-going silt removal, maintenance or renewal. c) Proposed sites at risk of flooding from any form, where there are critical drainage problems or on site of 1 hectare or more will only be supported if a site-specific flood risk assessment has been produced.	The FRA at **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]** addresses all forms of flood risk. a) All critical infrastructure (watercourse crossings aside) is located outside of the fluvial Flood Zones 2 & 3, see **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**. b) FRA provided as **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2].** All forms of flood risk have been considered, consistent with PPG and SPD. c) A site specific FRA has been prepared as noted in (b) above.
	LP 15	Sets out the Council's approach in relation to the management of surface water in a sustainable manner. It states that a development should consider surface water	An **oSWMP [EN010141/DR/7.13]** has been prepared as part of the application. Outcomes from consultation with CCC

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		management from the outset as an integral part of the design process and incorporate sustainable drainage systems (SuDS) in accordance with Cambridgeshire Flood and Water Supplementary Planning Document (SPD) or successor documents and advice from Cambridgeshire County Council as LLFA.	are set out in Section 8.3.
	LP 30	Biodiversity and Geodiversity; states that a proposal will be required to demonstrate that all potential adverse impacts on biodiversity and geodiversity have been investigated.	The WFD Assessment at **ES Vol 2 Appendix 8-2 [EN010141/DR/6.2]** has regard to potential impacts upon biological receptors in water bodies.
The Huntingdonshire Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA)	-	Level 1 SFRA recommends the criteria that should be used to assess future development proposals and the development of a sequential approach to flood risk. Level 2 SFRA makes recommendations on the requirements for drainage control and impact mitigation such as SuDS and design solutions that could reduce flood risk.	FRA provided as **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**, which assesses development vulnerability against flood risk. The FRA, **oSWMP [EN010141/DR/7.13]**, and Section 8.8 assess impacts of development upon flood risk.
Bedford Borough Local Plan 2030[20]	Policy 50S	Water Resources; states that development must not adversely affect the quality, quantity and flow of both ground and surface water. Development should be designed to avoid Source Protection Zones unless it can be demonstrated that there would be no adverse effect from the proposal.	See Section 8.8 for impacts on water resources during construction and operation
	Policy 92	Flood Risk; states that in considering new development water	FRA provided as **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**.

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		management and flood risk must be addressed.	
	Policy 93	Sustainable Drainage Systems; states that all development proposals must incorporate surface water drainage systems appropriate to the nature of the site. Post-development runoff rates should aim to achieve greenfield equivalents. It also outlines the drainage priority in order of discharge locations.	See **oSWMP [EN010141/DR/7.13]** which outlines SuDS designs which would restrict runoff to greenfield rates.
Bedford Borough Council Level 2 Strategic Flood Risk Assessment (SFRA) [21]		As for the CCC SFRA, this aims to provide a greater understanding of fluvial, surface water, groundwater and reservoir related flooding risks to sites and identifies sites for further risk analysis at the site-specific Flood Risk Assessment (FRA) stage.	FRA provided as **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**, which assesses development vulnerability against flood risk. The FRA, **oSWMP [EN010141/DR/7.13]**, and Section 8.8 assesses impacts of development upon flood risk.
Great Staughton Neighbourhood Plan	Policy GSNP 12	Should demonstrate that the adaptability of proposed buildings and associated spaces as climate continues to change e.g., using water more efficiently, reducing overheating and controlling high levels of rainwater run-off).	**ES Vol 2 Chapter 2 The Scheme [EN010141/DR/6.1]**, **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3]** and the **oSWMP [EN010141/DR/7.13]** show how drainage design has allowed for climate change impacts and how water recycling will be used to partially service the operation requirements for water.

Guidance

8.2.14 An assessment of the effects of the Scheme on the water environment has been undertaken in accordance with the legislation and policy summarised above. Where appropriate, informed professional judgement has been used where interpretation of legislation and policy has been required and also where there is a lack of published guidance to date.

8.2.15 Flood risk has been assessed in accordance with the requirements of the NPSs for Energy, including those that apply specifically to solar developments. The NPPF[12] and the accompanying online flood risk guidance provide necessary detail on the requirements for assessing flood risk for development.

8.2.16 Additionally, the CIRIA Environmental Good Practice on Site[22] and Control of Water Pollution from Construction Sites[23] have been taken into consideration when identifying mitigation measures.

8.3 Consultation and Engagement

Scoping

8.3.1 Scoping of this hydrology and flood risk assessment was undertaken as part of a wider EIA scoping exercise, the findings of which were recorded in **ES Vol 2 Appendix 4-1: EIA Scoping Report [EN010141/DR/6.2]** that was submitted in October 2023.

8.3.2 A Scoping Opinion was received in December 2023 as presented in **ES Vol 2 Appendix 4-2: EIA Scoping Opinion [EN010141/DR/6.2]**. The feedback received from PINS and stakeholders within the Scoping Opinion has been reviewed and the points relating to this chapter are summarised in Table 8.3 below.

Table 8.3 Scoping responses with respect to hydrology and flood risk

ID	Consultee and Date	Topic	Summary of Comments	Response/Action Taken
1.01	Planning Inspectorate 08/12/2023	Watercourse Crossings	The ES should identify which watercourses and/ or other features, such as roads, will be crossed and at what locations, with reference to an accompanying figure(s). The ES should describe the types of crossings that are required, their scale and dimensions and the nature of any associated construction works. Where this has not been determined, the ES should base assessments on the worst case scenario and justify why this scenario would lead to the greatest environmental impact. Sufficient details should be provided to inform a robust assessment of likely significant effects (LSE) on relevant aspects/ matters, including watercourse hydraulics and ecological receptors. Efforts should be made to agree the approach to watercourse and road crossings with the relevant consultation bodies.	A watercourse crossing assessment is provided at **ES Vol 2 Appendix 8-3 [EN010141/DR/6.2]**, which includes a description of each crossing location and a preliminary description of the likely crossing structure employed along with typical section drawings. These will be designed to accommodate storm flows of an appropriate return period, based upon a risk review of local receptors. Further details will be provided and agreed post-submission and secured via a suitable planning condition.
1.02	Planning Inspectorate 08/12/2023	Designated sites	**3.3.1 - Response to matters to scope out** - The ES should provide an assessment of the potential water effects of the Proposed Development on designated sites or provide evidence to demonstrate the absence of LSE including agreement with relevant consultation bodies.	Embedded design measures to protect water quality within the Order Limits to be applied on location, where concerns may first arise. **Section 8.8** and **Section 0** discusses potential impacts to designated sites.
1.03	Planning Inspectorate 08/12/2023	Water quality from increased siltation and pollution events - operation	**3.3.2 - Response to matters to scope out -** The Inspectorate considers that the presence of chemicals and soil disturbance during operation, including maintenance procedures, is unlikely to give rise to significant effects. The ES should explain why the operation of the Proposed Development would not give rise to routine emissions of chemicals (i.e. that panels are effectively inert) or sediment and how emergency releases would be managed	**Section 8.8 and Section 0** describes in detail, reasons for the conclusion that there will be no operational impact upon water quality. In summary these will make use of SuDS features to ensure any fire water is intercepted and

ID	Consultee and Date	Topic	Summary of Comments	Response/Action Taken
			within an Operation Environment Management Plan and/ or Soil Management Plan and Battery Safety Management Plan. The Inspectorate is content to scope this matter out of further assessment on this basis.	directed to an attenuation pond which will employ a cutoff sluice to isolate collected fire water and prevent onward migration to surface water bodies.
1.04	Planning Inspectorate 08/12/2023	Decom-missioning effects	**3.3.3 - Response to matters to scope out -** Provided a DEMP is produced and implemented to manage decommissioning activities and relevant measures are agreed with the Local Planning Authorities, the Inspectorate is content to scope this matter out of further assessment.	An **outline Decommissioning Environmental Management Plan (oDEMP) [EN010141/DR/7.6]** has been prepared as part of the application. Therefore no further detail is provided within this chapter, other than to state that details are provided within the oDEMP and are broadly considered similar to those addressed in the CEMP (see Paragraph 8.8.3). Decommissioning effects are therefore scoped out of the assessment reported in this chapter.
1.05	Planning Inspectorate 08/12/2023	Construction Compounds	**3.3.4 – Response to matters to scope out -** The Applicant should ensure that an assessment of the potential impacts from construction compounds on water environment receptors is included in the ES. The ES should also explain how the location of construction compounds, including the access, has been considered to reduce potential effects on the water environment and how any mitigation has been secured.	The **oSWMP [EN010141/DR/7.13]** and **outline Construction Environmental Management Plan (oCEMP) [EN010141/DR/7.3]** describe measures to mitigate impacts on water quality during the construction phase, including from activities accessing and within the construction compound. This is assessed in Table 8.12.

ID	Consultee and Date	Topic	Summary of Comments	Response/Action Taken
1.06	Planning Inspectorate 08/12/2023	Flood risk	**3.3.5 -** The ES should assess the potential flood risk to and from the Proposed Development and describe suitable mitigation measures and flood resilient construction techniques that will allow the development to remain operational throughout its 40-year lifespan.	An FRA has been provided which outlines flood risk to and from the development in **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**.
1.07	Planning Inspectorate 08/12/2023	Mitigation measures	**3.3.6 -** The Inspectorate notes the proposed use of mitigation measures, namely Sustainable Drainage Systems (SuDS). The design of such mitigation measures should be informed by relevant and up to date climate change allowances for the lifetime of the Proposed Development.	Drainage design criteria has been discussed in the **oSWMP [EN010141/DR/7.13]** using appropriate climate change allowances according to the expected lifetime of the Scheme.
1.08	Planning Inspectorate 08/12/2023	Assessment methodology	**3.3.7 -** The ES should explain how flood risk, drainage and surface water impacts have been identified and the methodology that will be used to determine the significance of effects. Any use of professional judgement to assess significance should be fully justified within the ES.	Methodology is described in **Section 8.4** of this chapter. This same method is used within **ES Vol 2 Appendix 8-1 FRA [EN010141/DR/6.2]** and in the **oSWMP [EN010141/DR/7.13]** to assess the significance of effects, as implemented here in **Sections 8.8 and 0**.
1.09	Planning Inspectorate 08/12/2023	Figures	**3.3.8 -** The Applicant should ensure that all features on the figures are clearly discernible, avoiding the use of coloured boundaries and features that are too similar or overlapping to be differentiated. This issue is particularly evident when reviewing the Water Framework Directive (WFD) river water bodies and relevant local authority boundaries on Figure 9-1.	Figures using clear colouring are provided within this chapter.
1.10	Planning Inspectorate 08/12/2023	Water resources	**3.3.9 -** The ES should provide details relating to the water supply and demand requirements during the construction and operational	Demand requirements are set out in the **oCEMP [EN010141/DR/7.3]**. Supply requirements for BESS fire

ID	Consultee and Date	Topic	Summary of Comments	Response/Action Taken
			phases of the Proposed Development (including in the context of managing BESS fire risk).	water is given in **ES Vol 2 Chapter 2: The Scheme [EN010141/DR/6.1]**.
1.11	Planning Inspectorate 08/12/2023	Flood Risk	**3.3.10 -** Where relevant, the ES and FRA should differentiate between Flood Zones 3a and 3b in order to determine which parts of the site are located in areas considered as 'high probability of flooding' and 'functional floodplain'. The ES should include a figure to illustrate the extent of Flood Zones 3a and 3b.	Development is sited outside of Flood Zone 3 so no differentiation between Flood Zones 3a and 3b is required.
1.12	Environment Agency 28/11/2023	Fluvial flood risk scope	As shown in Table 2 of the Planning Practice Guidance (PPG) for flood risk and coastal change, development classified as Essential Infrastructure under Annex 3 of the NPPF is only appropriate in these areas if the exception test is passed alongside the sequential test.	Development has been sited outside of the fluvial Flood Zones 2 & 3, according to the latest flood maps, as set out in **ES Vol 2 Appendix 8-1: FRA [EN010141/DR/6.2]**.
1.13	Environment Agency 28/11/2023	Fluvial flood risk scope	For the Flood Risk Assessment (FRA) we expect the applicant to ensure the flood risk impacts to and from the development are considered throughout all stages of construction. It is noted within the Scoping Report that there will be temporary roadways and storage of materials, so it will be necessary to ensure there is no loss of flood storage resulting from any temporary works, regardless of how long they are needed for.	A FRA is provided **in ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]** which considers all forms of potential flood risk to the site. Both operationally and during the construction phase, no stockpiling of materials will occur in the fluvial floodplain (i.e. Flood Zones 2 and 3).
1.14	Environment Agency 28/11/2023	Fluvial flood risk scope	For the operation stage, if the solar panels are located within Flood Zone 3 there is the potential for a slight reduction in flood storage volume 2 due to the displacement of water by panels and any associated infrastructure/tracks. Therefore, the FRA should: - Demonstrate that development within the floodplain of the 1% annual exceedance probability (AEP) plus climate change has been avoided where possible	All development of critical infrastructure has been sited outside of the fluvial Flood Zones 2 and 3 so there is no loss of floodplain storage as a result of the development. The FRA (**ES Vol 2 Appendix 8-1)** demonstrates how

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			- Ensure no increase in flood risk resulting from the Proposed Development, there should be no net loss of floodplain storage and any deflection or construction of flood flow route should be safely managed within the site. Mitigation measures should make as much use as possible of natural flood management techniques. - Demonstrate how the site will remain operational during times of flooding - Consider how site users, e.g. staff needed for operational or maintenance, will be kept safe from any identified flood hazards and any damage minimised	the Site will remain safe during the operational phase.
1.15	Environment Agency 28/11/2023	Water Resources	If dewatering is required, it will require an abstraction licence if it doesn't meet the criteria for exemption in The Water Abstraction and Impounding (Exemptions) Regulations 2017. It may also require a discharge permit if it falls outside of our regulatory position statement for de-watering discharges.	Dewatering is not anticipated as part of the construction or operation stage of this project (foundations expected to be uniformly shallow or piled). Should this however be required, any licencing requirement will be secured through implementation of the CEMP (see **oCEMP [EN010141/DR/7.3]**.
1.16	Historic England 28/11/2023	Groundwater Levels	The potential impact of the proposed Scheme on local groundwater levels should be considered. If waterlogged organic archaeological and paleoenvironmental remains are present on the site, any changes to the groundwater levels may alter the local preservation conditions, which in turn may lead to the degradation and/or loss of any vulnerable remains. The potential for waterlogged organic archaeological and paleoenvironmental remains within these sorts of features would need to be established so that the impact of the proposed scheme can be determined and mitigated.	Due to the nature of the development (piled foundations for the panels and relatively shallow foundations for other features), there is not expected to be any significant impact to groundwater levels. This is covered in **Section 8.8.**

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1.17	Historic England 28/11/2023	Water Quality	The Flood risks, Drainage and Surface water chapter discusses the potential contamination through factors such as chemical spillages/leakages from construction activities or vehicles (Section 9.5.4). Contamination might have an effect on archaeological preservation and recovery and so would need to be assessed.	Potential water quality impacts during construction are discussed in **Section 8.8**. Measures outlined in the **oSWMP [EN010141/DR/7.13]** and the **oCEMP [EN010141/DR/7.3]** would avoid impacts to archaeological preservation.
1.20	Environment Agency 28/11/2023	Flood risk modelling and data	It is up to the applicant to review the modelling and determine whether it appropriately represents flood risk on a site-specific basis or whether any updates or modifications need to be made to improve its usefulness in informing an FRA. The applicant should also provide evidence of any modelling checks and subsequent updates carried out and document these in the FRA model reporting. It is also worth noting that there is new modelling including some changes to the extents on the River Kym due early in 2024, which we'd expect to be reviewed as part of the FRA.	The latest flood model (at the time of drafting June 2024) has been obtained from the EA and has been assessed as being of appropriate detail for the purposes of assessing fluvial risk to this Site and to define areas outside of this as appropriate for development (see **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]**).
1.21	Environment Agency 28/11/2023	Flood risk modelling and data	Where watercourses have not been modelled, we agree that EA surface water mapping may be a useful gauge of the risk, but the applicant will still need to determine its usefulness and decide whether additional modelling is required, particularly in relation to future flood risk.	See **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]** which assesses the risk from minor watercourses. No additional modelling is considered necessary as EA model results were provided for the 0.1% AEP event and for all the minor watercourses, confirming that critical infrastructure is located outside Flood Zones 2 and 3. See **ES Vol 2 Appendix 8-1 [EN010141/DR/6.2].**

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1.22	Environment Agency 28/11/2023	Climate Change	We're pleased to see that climate change is considered within the Scoping Report. However, in terms of flood risk, we feel that having separate flood risk and climate change chapters within the EIA creates a disjointed approach to assessing future flood risk and would recommend the flood risk chapter include its own climate change section so that future flood risk is sufficiently considered, with reference to 'Flood Risk Assessment: climate change allowances'. The site falls within the Upper and Bedford Ouse Management Catchment peak river flow allowances. Essential infrastructure in Flood Zone 3 should use the higher central climate change allowance. Given the 40-year lifespan of the Proposed Development, we would expect the 30% climate change allowance associated with the 2080s epoch to be assessed, given that the development's life span will fall outside of the 2050s epoch band.	**ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]** addresses the future impacts of climate change on flood risk to the development. The **oSWMP [EN010141/DR/7.13]** considers appropriate climate change allowances in terms of surface water runoff.
1.23	Environment Agency 28/11/2023	Proximity to Water bodies	There is suggestion throughout the Scoping Report that some works may take place near main river channels. Given that Site A lies either side of the Pertenhall Brook, and that the River Kym forms the northern boundary of Site C, we would recommend the flood risk implications associated with the proximity of the development to the main river channels be scoped into the EIA if works are going to be within 20 metres of a main river channel.	Works near to main river channels are limited to access track crossings for the development, which are documented within the watercourse crossing assessment provided at **ES Vol 2 Appendix 8-3: Watercourse Crossing Assessment [EN010141/DR/6.2]**. . Potential water quality and flood risk impacts relating to this work is outlined in **Section 0**.
1.24	Environment Agency 28/11/2023	Sequential Test	In line with paragraph 161 of the NPPF, 'all plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property'.	See response to **1.12** above.

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1.25	Environment Agency 28/11/2023	Opportunities	In accordance with paragraph 161 of the NPPF, all plans should make use of opportunities provided by the new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, making use of natural flood management techniques as part of an integrated approach to flood risk management. We believe that Natural Flood Management solutions would be possible and desirable within this area and recommend consideration of options that slow the flow of water and seek to hold water at source rather than exacerbate issues of surface water downstream. Opportunities that link in with Biodiversity Net Gain should be explored.	Indicative landscape proposals are shown on the **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3],** along with the **outline Landscape and Ecological Management Plan [EN010141/DR/7.7]**. Proposals for the use of swales and other SuDS features across the developed area are also outlined in the **oSWMP [EN010141/DR/7.13]**.
1.26	Environment Agency 28/11/2023	Flood Risk, Drainage and Surface Water	We note that a scheme or plan for managing any potential fire-water has not been mentioned within the report. As there is a battery storage element to the proposed scheme, with a potential fire risk, we would expect the CEMP to include a fire-water management plan to ensure that the groundwater beneath the site, and controlled waters in general, are not at risk from contamination from any fire-waters and fire-fighting additives.	Measures to store fire water on site are outlined in **ES Vol 1 Chapter 2 [EN010141/DR/6.1]** and the process for managing the containment of used fire water is outlined in the **oSWMP [EN010141/DR/7.13]** and Paragraph Error! Reference source not found.**.**
1.27	Environment Agency 28/11/2023	Water Resources	If dewatering is required, it will require an abstraction licence if it doesn't meet the criteria for exemption in The Water Abstraction and Impounding (Exemptions) Regulations 2017. It may also require a discharge permit if it falls outside of our regulatory position statement for de-watering discharges.	Dewatering is not anticipated as part of the construction or operation stage of this project (foundations expected to be uniformly shallow or piled). Should this however be required, all licencing will be obtained as necessary.
1.32	Cambridgeshire County Council - No Date	Flood Risk and Drainage	The general principle is fine and the recognition of the existing flood risk is noted. However, this will need to be managed and designed out in a way that ensures that the development will not increase flood risk or pose a risk to the proposed scheme. The proposals to	**ES Vol 2 Appendix 8-1 [EN010141/DR/6.2]** and **oSWMP [EN010141/DR/7.13]** have been developed to address flood risk and

ID	Consultee and Date	Topic	Summary of Comments	Response/Action Taken
			manage water through the construction and operation phases is noted in the report. General interception principles should be incorporated in the design of the surface water network, to reduce the risks around any generated overland flows.	from the Scheme and describe how runoff will be controlled.
1.33	Bedford Borough Council 28/11/2023	Water Quality	BBC express concern regarding possible soil and groundwater pollution arising from the 40-year operational stage and possible effect on agriculturally arable soils; matter should be assessed (it is noted that mitigation measures to form part of a LEMP condition if consent granted).	Water quality during operation is assessed in Table 8.13**.**
1.34	Historic England 28/11/2023	Groundwater Levels	The potential impact of the proposed Scheme on local groundwater levels should be considered. If waterlogged organic archaeological and paleoenvironmental remains are present on the site, any changes to the groundwater levels may alter the local preservation conditions, which in turn may lead to the degradation and/or loss of any vulnerable remains. The potential for waterlogged organic archaeological and paleoenvironmental remains within these sorts of features would need to be established so that the impact of the proposed scheme can be determined and mitigated.	Due to the nature of the development (piled foundations for the panels and relatively shallow foundations for other features), there is not expected to be any significant impact to groundwater levels. This is covered in **Section 0.**

Statutory Consultation

8.3.3 Statutory consultation on the project took place between September 2024 and October 2024. This included consultation on the Preliminary Environmental Information Report (PEIR). The feedback received from statutory consultees is summarised within Table 8.4.

Table 8.4 PEIR consultation responses with respect to hydrology and flood risk

Consultee and Date	Topic	Summary of Comments	Response/Action Taken
Bedford Borough Council	BESS facility	The NFCC guidance for BESS notes that consideration should be given within the site design to the management of water run-off such that in an emergency situation where polluted water may run-off from the facility this can be safely contained and treated, rather than risking pollution of groundwater or local watercourses. It is noted that the management and removal of contaminated firewater needs specific address in any Operational Environmental Management Plan including an emergency strategy should such firewater breach into river catchment areas and/or leach into ground water or soils.	The outline design of the fire water storage arrangements is set out in **ES Vol 1 Chapter 2: The Scheme [EN010141/DR/6.1]** and the **oSWMP [EN010141/DR/7.13]**. The **outline Battery Safety Management Plan (oBSMP) [EN010141/DR/7.10]** contains further controls to mitigate for potential impacts arising from the BESS.
Bedford Borough Council	BESS facility	'The access tracks will be required to cross a number of watercourses…will be culverted. It is suggested that this matter is addressed as a detailed design matter and may require consent from the LLFA. The matter could be addressed by way of a pre-commencement Condition. It would be a requirement that all culverts are removed at the Decommissioning Phase and the watercourse topography and vegetation reinstated.	A watercourse crossing assessment has been provided as part **ES Vol 2 Appendix 8-3 [EN010141/DR/6.2]**, which includes a description of the crossing locations and a preliminary description of the likely crossing structure employed. Representative cross sections for open span crossings or culverts have also been provided. These will be designed to accommodate storm flows of an appropriate return period, based upon a risk review of local receptors. Further details will be provided and agreed post-consent.
Cambridgeshire County Council	Construction Phase Drainage	The proposals with regard to the Construction Phase of the solar farm are supported by the Lead Local Flood Authority (LLFA) and give consideration to water quality aspects as well as management of surface water. The use of swales promotes biodiversity. It is noted that proposed lagoons will be utilised during construction for sediment settlement, and these will be retained for the Operational Phase, however, it	The conclusion of the **oSWMP [EN010141/DR/7.13]** is that the lagoons are sized to provide storage for the 100yr +25% climate change (CC) event and will have a suitable control – these will be maintained for the operational

Consultee and Date	Topic	Summary of Comments	Response/Action Taken
		is not clear that there will be a suitable control on runoff rates during the Construction Phase.	phase. This will be supported in the detailed design by hydraulic calculations.
Cambridgeshire County Council	Solar Panel drainage and potential for erosion from runoff	It is proposed that appropriate measures will be remediated and retained during the Operational Phase which is supported by the LLFA and the Host Authority look forward to more details being provided. However, these aspects mainly focus on the access tracks and Battery Energy Storage System (BESS) areas. Rainfall upon solar arrays is generally shed between rows and allowed to run onto the ground. This concentration of water flow can create channelised flows which can erode the soil and allow a greater volume to enter watercourses or flow to adjacent areas at a greater rate than would otherwise occur in greenfield conditions. Therefore, further consideration should be given to drainage of the solar array areas - particularly during the establishment of vegetation. This may include the inclusion of filter drains between solar arrays or swales at the lowest points of the site to prevent channelling of water and promote infiltration.	Further consultation with CCC lead to agreement that solar panels should not lead to channelisation assuming that vegetation is established and well maintained, particularly during the first 5 years of operation. The maintenance regime of the grassland under panels has been described in detail within the **oSWMP [EN010141/DR/7.13]** and **oLEMP [EN010141/DR/7.7]**.
Cambridgeshire County Council	Alteration of natural flow paths	High surface water flood risk is present on all sites (A - D). Altering natural flow paths should be avoided where possible and consideration should be given to the design and layout of the BESS.	Alteration of ground levels within the PV panels is not proposed, so natural flow paths will not be altered as set out within the **oSWMP [EN010141/DR/7.13]**. The BESS has been located within an area with only minor encroachment of surface water flooding, with no upstream catchment (i.e. should have no impact on surrounding flows), as agreed with CCC in further consultation.

Consultee and Date	Topic	Summary of Comments	Response/Action Taken
Cambridgeshire County Council	Watercourse crossings	Watercourse crossings will be subject to agreement with the LLFA. It is assumed this will be through the DCO protective provisions. Further clarity should be provided at this point around the culvert design, as this will make up part of the agreed drainage under the DCO permission.	A watercourse crossing assessment has been completed **ES Vol 2 Appendix 8-3 [EN010141/DR/6.2]**.
Cambridgeshire County Council	Flooding and drainage	What the Host Authority and LLFA would require under the wider DCO: a) Hydraulic calculations including the 100%, 3.3% and 1% Annual Exceedance Probability (AEP) storms. FEH 2022 rainfall data required and suitable climate change for 3.3% and 1% AEP. b) Details drainage layout plans for the solar array rows and BESS unit areas for each catchment. c) Detailed SuDS and drainage proposals to protect the receiving watercourse for the construction, operation, and decommission. d) Modelling for the 0.1% AEP SWFR extent not available (see Figure 8-3). e) Demonstration of pollution risk areas and how water is managed during all phases in detail for each catchment, ensuring water is suitably managed. f) Infiltration testing to confirm rates if viable. g) Flow rates for each individual catchment. h) Maintenance proposals in line with best practice guidance. i) Sight of the Watercourse Crossings Review document.	a) To be provided within the detail design b) To be provided within the detail design c) To be provided within the detail design d) All available fluvial modelling results obtained from the EA relevant to the Site, however no infrastructure located within the fluvial flood zones (including Flood Zone 2 – 0.1% AEP). Surface water mapping also reviewed up to the 0.1% AEP event and discussed in further consultation with CCC, with reference to placement of infrastructure. Agreed no further modelling is required. e) Pollution risk areas addressed within the **oCEMP [EN010141/DR/7.3]**. f) Infiltration testing to be completed during detailed design. g) Rates /ha provided in **ES Vol 2 Appendix 8-1: FRA [EN010141/DR/6.2]**can be applied to the whole site, or individual parcels of land. The benefits of determining hydrological catchment areas isn't considered necessary when designing SuDS, where the developed area is important. No cross catchment flows are designed. h) The **oSWMP [EN010141/DR/7.13]** includes a maintenance plan for all SuDS feature types employed in the scheme.

Consultee and Date	Topic	Summary of Comments	Response/Action Taken
			i) See watercourse crossing assessment as **ES Vol 2 Appendix 8-3 [EN010141/DR/6.2]**.
Bedford Borough Council		BBC have read the Promotor's Chapter 8 (Hydrology and Flood Risk) report and support the more detailed comments made by CCC (set out above).	Noted
Bedford Borough Council	Infiltration Testing	Infiltration testing is required to confirm rates if viable for each catchment.	Infiltration testing is proposed to be completed during detailed design . As a conservative approach, at this time the assessment assumes that no infiltration is possible.
Bedford Borough Council	Catchment runoff rates	Flow rates for each individual catchment are required.	Rates /ha provided in **ES Vol 2 Appendix 8-1: FRA [EN010141/DR/6.2]** can be applied to the whole site, or individual parcels of land. The benefits of determining hydrological catchment areas isn't considered necessary when designing SuDS, where the developed area is important. No cross catchment flows are designed.
Bedford Borough Council	Solar Panel drainage and potential for erosion from runoff	Rows of solar arrays lead to rainfall shed to the ground between the rows and depending upon infiltration rates can lead to additional runoff to adjacent watercourses, especially as gradients increase. This can exceed Greenfield runoff rates. Detailed information is required to demonstrate how this additional runoff will be managed for the solar array areas via swales, filter drains etc. This is particularly important prior to vegetation becoming fully established.	The maintenance regime of the grassland under panels has been described in detail within the **oSWMP [EN010141/DR/7.13]** and **oLEMP [EN010141/DR/7.7]**.
Bedford Borough Council	Maintenance of SuDS and	The Promotor should ensure that all existing watercourses are maintained and remediated throughout each phase of the Development. All obstructions to watercourses should	The **oSWMP [EN010141/DR/7.13]** includes a maintenance plan for all SuDS feature types employed in the scheme.

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	watercourses	be removed during and after construction. Maintenance proposals are required for SuDS proposals and existing watercourses during and post construction.	
Bedford Borough Council	Watercourse consenting	Any structures within the banks of watercourses such as culverts to allow access over, will require Ordinary Watercourse Consent from the LLFA.	The **draft DCO [EN010141/DR/3.1]** includes for the disapplication of s.23 of the Land Drainage Act 1991 such that Ordinary Watercourse Consent would not be required. This is subject to BBC and CCC providing their consent to the disapplication under s.150 of the Planning Act 2008.
Bedford Borough Council	Surface water drainage	Detailed drainage layout plans are required for the BESS unit areas and solar array rows and for each catchment.	Detailed drainage plans will be confirmed at the detailed design stage post-consent. The **oSWMP [EN010141/DR/7.13]** sets the principles by which surface water will be managed across the Scheme.
Bedford Borough Council	Hydraulic calculations for watercourse crossings	Detailed hydraulic calculations are required including the 100%, 3.3% and 1% Annual Exceedance Probability (AEP) storms. FEH 2022 rainfall data is required and suitable climate change values for 3.3% and 1% Annual Exceedance Probability (AEP) storms.	Hydraulic calculations will be provided for crossings during detailed design, post consent.
Environment Agency	Watercourse crossings	Reduced cross section of watercourse due to inappropriate sizing of culvert can lead to increased flow velocities, leading to downstream erosion (scour) of the channel bed. Culverts can also impede flow when under high flow conditions and the carrying capacity of the culvert is reached, leading to backing up of water upstream of crossing location. Construction/installation of box and pipe	A watercourse crossing assessment has been undertaken (ES Vol 2 Appendix 8-3), making recommendations for watercourse crossing types, which will be sized during detailed design based upon hydrological calculations for extreme events.

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		culverts impact river bed morphology, and may weaken the channel bed, encouraging downstream erosion (scour).	
Environment Agency	Control of Fire water (BESS)	The retention basin associated with the BESS will have a sluice gate that can be closed during a fire to prevent contaminated water leaving the site. The applicant does not specify the mechanism by which the gate will be activated. If this is an automatic function, we would like to understand how it is triggered and what fail-safe will be in place. If the sluice needs to be closed manually at the outbreak of a fire, a clear method statement must be produced, and we need assurance that this will always be done.	Information on the sluice gate operation is given in the **oSWMP [EN010141/DR/7.13]** and the **oBSMP [EN010141/DR/7.10]**.
Environment Agency	Hydrogeological Receptors	The list of receptors in 8.3.6 doesn't mention Source Protection Zones (SPZ). In 8.3.14 Table 8.4, secondary aquifers should be acknowledged. Currently only principal aquifers are mentioned. Inclusion of all receptors at this stage is important for completeness and the avoidance of doubt. Ensure all receptors are considered in future assessments, even if it is to scope them out at an early stage.	List not intended to be exhaustive, however SPZs now added to example list of hydrological receptors. Secondary aquifers are mentioned in receptor sensitivity table (Table 8.7).
Environment Agency	Third Party Flood Risk Impacts	With regards to the impact magnitude as described within Table 8.4 changes in peak flood levels of less than or equal to 10 millimetres are described as negligible. Please note that the classification presented within this table is slightly at odds with the NPPF which details that there should be no increases to flood risk elsewhere because of new development Any impact on flood risk will need to be reviewed on a case-	Noted and clarification acknowledged. The reference to 10mm is based on the normally accepted modelling tolerance and in the context of an Environmental Impact Assessment is a measure of the significance of potential impact (not the residual effect). Impacts on flood risk have been considered in detail for a number of scenarios and in the context of NPPF for the FRA

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		by-case basis as the spatial extent of any increase is also an important consideration, not just the magnitude of any increase in peak water levels. Furthermore, considerations around modelling precision may also influence what is classed as an observable increase or impact versus what might be attributable to modelling precision limitations and instability. There is a section on the impacts on off-site flood risk within the guidance on undertaking modelling for flood risk assessments which should be consulted and provides some useful considerations.	presented in **ES Vol 2 Appendix 8-1: FRA [EN010141/DR/6.2]**.
Environment Agency	Fluvial Flood Risk	This section notes that it is assumed that flood level data associated with fluvial flooding from the Duloe Brook and River Kym is sufficient to form an assessment to this site and a qualitative assessment of third-party flooding impacts. Please note, these watercourses were modelled as part of the Lower Great Ouse Flood Risk Mapping Study (Mott Macdonald, 2015). This modelling is old and updates to climate change allowances and other datasets may mean that the representation of flood risk is not representative of current conditions. Furthermore, where infrastructure is placed in areas of flood risk associated with these watercourses a qualitative assessment of flood risk to confirm third party impacts would not be suitable. We would expect a quantitative assessment so that appropriate mitigation measures can be implemented where impacts to third parties are identified. If you are placing infrastructure within the flood extents for these watercourses it is important to note the following limitations with the existing Environment Agency hydraulic modelling. Firstly, these models use now superseded climate change allowances. The hydrological boundary conditions applied to these models are also quite old and it	All critical infrastructure has been sited outside of the present day fluvial Flood Zones 2 & 3 for development planning, i.e. present day scenarios. Some solar panelling has been sited within the fluvial extents (i.e. within Flood Zone 2 & 3) at risk under future climate change scenarios for the extreme (0.1%AEP) event. However, these are extreme extents under extreme climate scenarios. The flood risk due to the development, even under climate change, would still remain the same due to the nature of the solar panels being supported on piled foundations.

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		would be prudent to check that the flows are still representative. Furthermore, more recent Lidar Digital Terrain Model (DTM) data is available for this area. Please review any modelling data that you use to ensure that it adequately represents current and future baseline conditions for the development area.	
Environment Agency	Climate change allowances	This issue, raised within the scoping phase, requires an assessment of flood risk over the 40 year lifespan of the development. Action taken refers to the assessment within the FRA, however this does not currently include suitable assessment of climate change. It is noted that development has been sited outside of Flood Zones 2 and 3, however the FRA and design flood event should include an allowance for climate change to cover the Proposed Development lifespan. The FRA and ES chapter should confirm this has been applied and that the development layout, taking account of mitigation measures, remains appropriate in terms of flood risk.	Climate change mapping has been reviewed within **ES Vol 2 Appendix 8-1: FRA [EN010141/DR/6.2]** according to the 2080s epoch, which is considered to be appropriate for the design life of the scheme. No significant infrastructure apart from panelling is within these extents (panelling only for the most extreme 0.1% AEP event and even then, there is no change in flood risk due to panel construction). The BESS (only essential infrastructure) is located over 1km from the 0.1% AEP CC extent, therefore considered not to be at risk during its lifetime.
Environment Agency	Groundwater	Statement that “no significant groundwater aquifers are present at the Site” is misleading as it only applies to bedrock geology. Large areas of superficial geology underlying the site are secondary A aquifer, which can support local water supplies, and may form an important source of base flow to rivers. Review hydrogeological descriptions and ensure that full information is given as necessary.	Descriptions updated accordingly and the superficial drift aquifers have been assessed within this chapter.

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Environment Agency	Protection to watercourses	We recommend that riparian buffer strips measure a minimum of 10m from the top of the riverbank to the development for all watercourses on the site, unless existing physical constraints prevent this.	A number of buffers have been incorporated, as set out in the **outline Landscape and Ecological Management Plan [EN010141/DR/7.7]**. In respect of watercourses, a minimum 10m buffer between the fenceline of the solar farm and watercourses has been proposed.
Environment Agency	Watercourse crossings	This section notes that a watercourse crossings assessment will be undertaken. The cross-sectional area of crossings will be sized according to appropriately modelled storm flows for the upstream catchments. This is welcomed. Please see the additional comments section below for further information. All crossings should be carefully designed and their impacts assessed within the Flood Risk Assessment. Note that on Main River watercourses we would oppose any new sections of culverts, and would require crossings over to be clear span with a soffit level above the design flood level. Any such works would require a Flood Risk Activity Permit under the Environmental Permitting (England and Wales) Regulations 2016.	Noted. A watercourse crossing assessment has been undertaken in **ES Vol 2 Appendix 8-3 [EN010141/DR/6.2]**.The baseline conditions at each crossing point are described and a proposed crossing type is proposed. Watercourse crossings are to be designed post-consent and delivered via the SWMP (see **oSWMP [EN010141/DR/7.13]).**
Environment Agency	Watercourse crossings	Any proposed crossings should be designed so that the soffit level of any bridges sits above the design flood level. The design flood level for permanent crossings in this case would be the 1% (1 in 100) annual exceedance probability (AEP) plus higher central climate change scenario. For temporary crossings as part of the construction phase of the scheme the present day (without climate change) 1% (1 in 100) AEP scenario can be used.	Noted. A watercourse crossing assessment has been undertaken in **ES Vol 2 Appendix 8-3 [EN010141/DR/6.2]**.

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Environment Agency	Watercourse crossings	Watercourse crossing design – "The bed profile would remain unchanged to prevent a change in geomorphology at each crossing point." Redraw designs and ensure that watercourse crossing choices are correctly specified within the text, i.e. bottomless arched culverts (as stated in App. 8.2) that do not interfere with the channel bed are being utilised.	Noted. A watercourse crossing assessment has been undertaken in **ES Vol 2 Appendix 8-3 [EN010141/DR/6.2]**.
Environment Agency	Climate Change	The Preliminary Flood Risk Assessment does not describe the impacts of climate change on flood risk.	Climate change mapping has been reviewed within **ES Vol 2 Appendix 8-1: FRA [EN010141/DR/6.2]** according to the 2080s epoch, which is considered to be appropriate for the design life of the scheme. No significant infrastructure apart from panelling is within these extents (panelling only for the most extreme 0.1% AEP event and even then, there is no change in flood risk due to panel construction). The BESS (only essential infrastructure) is located over 1km from the 0.1% AEP CC extent, therefore considered not to be at risk during its lifetime.
Environment Agency	Fluvial modelling data and climate change allowances	Flood levels for the 0.1% AEP event are provided here for the Pertenhall Brook and the River Kym. These appear to have been derived from the Flood Zone 2 flood map outline. These levels do not reflect suitable data to inform the flood risk assessment. Flood modelling of the Lower Ouse River Kym catchment id referred to in Paragraph 3.3.4 and this data should be used in the detailed assessment of flood risk. Climate change allowances from this modelling should be presented within the FRA to establish the design flood event. The design	Upper River Kym model obtained from the EA and modelled levels extracted. Climate change mapping is presented also within **ES Vol 2 Appendix 8-1: FRA [EN010141/DR/6.2]**.

Consultee and Date	Topic	Summary of Comments	Response/Action Taken
		flood event should be the 1% AEP plus the appropriate climate change uplift in fluvial flows.	
Environment Agency	Fluvial modelling data and climate change allowances	Reference is made to available modelling of the River Kym however no reference is made to climate change data, or to the proposed design life of the development. Confirmation of the design life of the development will allow confirmation of the climate change allowances to be included within the FRA. The design flood event must include suitable climate change data. For development classed as essential infrastructure, then from a fluvial flood risk perspective the higher central climate change allowance should be used (70th percentile). A sensitivity test for the credible maximum scenario, which in this case would be the upper climate change allowance for fluvial flows (95th percentile) should also be completed. The design life of the development should conclude once the site has been fully decommissioned.	Upper River Kym model obtained from the EA and modelled levels extracted. Climate change mapping is presented also within **ES Vol 2 Appendix 8-1: FRA [EN010141/DR/6.2]**. Essential infrastructure has been sited outside of any areas at fluvial flood risk i.e. outside Flood Zones 2 & 3 (including climate change allowances).
Environment Agency	Surface Water Mapping	The Preliminary Flood Risk Assessment references the pluvial flood map and associated water depths from this product. Please be aware, the Risk of Flooding from Surface Water dataset has recently been updated.	The FRA has been updated with the new surface water flood risk mapping data.
Environment Agency	Surface Water Flooding (BESS)	It is understood that there are currently two potential locations for the BESS. However, both locations are potentially at risk of pluvial flooding.	The BESS is confirmed as located within an area with minor encroachments of surface water flooding. This has been discussed with CCC and it was agreed no modelling required since this is at the top of the surface water catchment (no incoming flows to the compound area). Incidental rainfall will be dealt with in accordance with the **oSWMP [EN010141/DR/7.13]**.

Consultee and Date	Topic	Summary of Comments	Response/Action Taken
Environment Agency	Surface water flooding	The proposed ground clearance of solar panel is discussed, with the bottom edge of fixed angle panels set 800mm above ground level. In the absence of a suitable deign flood level being set out, including an allowance for climate change, it is not possible to confirm if the design of the panel set up is suitable.	Depth banding in the new surface water mapping has been reviewed in the FRA, including climate change scenarios. Panel bottom edges will be set a minimum of 200mm above the maximum surface water levels for the design (1.0% CC) event.
Environment Agency	Ordinary Watercourse Flood Risk	This section notes that all proposed infrastructure will be in Flood Zone 1. We welcome this. There are some small ordinary watercourses which cross the site which have no associated Flood Zone mapping due to the small size of their respective catchments. There may be flood risk associated with watercourses which have smaller catchments, it is just not mapped or included within the Flood Map for Planning.	The risk associated with these smaller channels is indicated by the surface water mapping.

8.4 Assessment Methodology

8.4.1 Source, pathway, receptor style language (SPR) is used to formulate the hydrological assessment. Development that disturbs hydrological pathways may have significant effects on the hydrological cycle. For instance, it can reduce infiltration rates and the water storage capacity of soils and increase surface run-off rates. This can have the effect of increasing erosion risk, downstream flood risk within river catchments and changing water table levels in receiving sites and lower-lying areas.

8.4.2 The soil is also a pathway for the transmission of waterborne contamination that may be mobilised by ground disturbance caused by development, resulting in downstream and other water transmission effects. Particulate contamination can arise from increased surface run-off and erosion. Examples are the nitrogen and phosphate enrichment and eutrophication of watercourses and an increase in suspended solids like silt. Further examples of hydrological pathways are provided in Table 8.5.

Table 8.5 Examples of Hydrological Pathways

Pathway	Examples
Surface Runoff	Overland flow and lateral flow within soils (volumes, rates and direction) as well as constituent pathways created by entrainment of dissolved phase and particulates within surface runoff impacting surface water quality.
Groundwater Recharge	Infiltration vertically through soils and then percolation towards nearby water bodies (surface water and groundwater) as well as contaminant pathways created by mobilisation of pollutants held within soils from present or historic land use.
Coastal Processes	Tidal effects on estuaries and coastlines, groundwater levels and flow (and saline intrusion), erosion and discharges to sea.

8.4.3 Receptors vulnerable to development include residents in urban areas and species within habitats sensitive to hydrological change. Further examples of receptors considered are provided in Table 8.6.

Table 8.6 Examples of Hydrological Receptors

Receptor	Examples
Water bodies	• Surface water (springs, streams, rivers, lakes, estuaries and sea) • Subsurface soil water, groundwater (Principal and Secondary Aquifers) • Reservoirs (drinking, irrigation and hydroelectric) • Directions of flow, volumes, rates, storage of water and water quality
People, Industry & Agriculture	• Housing, commercial and industrial property • Water supplies (quantity and quality), flood defences (and protection) • Energy production, transmission and distribution • Critical Infrastructure such as electrical, gas, water, telecommunications, highways (including tunnels and underground services), railways and airports • Manufacturing, chemical, pharmaceutical sites • Farmland and livestock • Recreation related to rivers, lakes and the sea
Ecology	• Designated areas, riparian areas and protected species • Habitats that rely on remaining inundated (wetlands) or are periodically inundated (meadows) • Fish (especially migratory fish) • Amphibians (e.g. Great Crested Newts and Natterjack Toad) • Invertebrates (e.g. Freshwater Pearl Mussels) consider the water column and substrate
Mineral Extraction	• Extractive industries and construction (especially sub-water table)

Sensitivity (Value) Criteria

8.4.4 The sensitivity of a receptor, i.e. its sensitivity to change or its value, is determined with reference to nationally recognised standards e.g. the Flood

Risk Section of technical guidance to the NPPF[24]. The sensitivity (value) of receptors depends on:

- environmental policies and designations;
- the environmental, social and economic value and sensitivity of a receptor to a change of baseline conditions at the location of the Scheme; and
- a receptor's resilience and capacity to sustain its current condition and function apply.

8.4.5 The criteria for determining the sensitivity of hydrological receptors are provided in Table 8.7. Note that criteria for lower levels of sensitivity are included within the qualifying criteria for higher levels of sensitivity, therefore the highest level of sensitivity appropriate to each receptor is selected.

8.4.6 This process establishes the baseline conditions upon which the magnitude of the impacts associated with the development are then assessed.

Table 8.7 Sensitivity Classification

Receptor Sensitivity / Value	Receptor	Examples of Sensitivity Classes based on Table 8.~~Table 8.~~6 with Criteria Included
Very High	**Resilience Criteria**	Receptor is near or at capacity and will permanently change due to development. Shift in baseline conditions due to development will be ≥ 10%.
	Water Criteria	Nationally significant water body or nationally significant attribute of a water body. Designated water protection zones, providing a high quality yield of water and important baseflow (dry weather flow) to surface water bodies. Nitrate Sensitive Areas and Nutrient Neutrality Zones are included. Watercourses having a WFD classification shown in a River Basin Management Plan (RBMP) and with a Q_{95} flow ≥ 1 m^3/s. Flood Zone 3b. Groundwater Source Protection Zone (SPZ) 1 i.e. 50-day travel time, minimum radius 50 m. Above a Principal Aquifer. Land determined by the Local Authority under Part IIA of the Environmental Protection Act 1990 to be contaminated. Operational or historic licenced landfills. Land that if disturbed will cause water pollution and permanent harm via surface water and/or groundwater pathways.
	People Industry and Agriculture Criteria	Public and private water supply (PWS) abstractions, land in PWS Zone of Contribution (ZoC), land vulnerable to erosion (particularly coastal and estuarine areas), ground source heat pumps. Essential infrastructure and highly vulnerable land uses[24~~24~~]. Agricultural land Grades 1 & 2. Licenced commercial, private and recreational fisheries. Designated bathing waters. Abstractions for PWS supplying more than 20 m^3/day for human consumption and/or serves more than 100 people. Land that if flooded would affect more than 100 residential, commercial and/or industrial properties[25]. Land within a zone of significant active coastal erosion.
	Ecology Criteria	Designated sites such as Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites, protected species. Habitats recognised nationally and internationally for their biodiversity and/or being good examples of their type.

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Receptor Sensitivity / Value	Receptor	Examples of Sensitivity Classes based on Table 8.~~Table 8.~~6 with Criteria Included
	Mineral Extraction Criteria	Any mineral extraction or construction activity that involves consented off-site discharge and/or requires sub-water table water level controls.
High	**Resilience Criteria**	Receptor is approaching capacity and once reached will permanently change due to development. Shift in baseline conditions due to development will be ≥ 10%.
	Water Criteria	Regionally significant water body or regionally significant attribute of a water body. Designated water protection zones, providing a high quality yield of water and important baseflow (dry weather flow) to surface water bodies. Nitrate Sensitive Areas and Nutrient Neutrality Zones are included. Watercourses having a WFD classification shown in RBMP and with a Q_{95} flow ≤ 1 m^3/s. Flood Zone 3a~~2~~. Groundwater Source Protection Zone (SPZ) 2 i.e. 400-day travel time, minimum radius 250-500 m. Above a Principal Aquifer. Land where pollutants are present within soils due to previous use. Operational or historic licenced landfills. Land that if disturbed, will cause water pollution and permanent harm via surface water and/or groundwater pathways.
	People Industry and Agriculture Criteria	PWS abstractions, land in PWS Zone of Contribution (ZoC), land vulnerable to erosion (particularly coastal and estuarine areas), ground source heat pumps. Highly vulnerable land uses[24~~24~~]. Agricultural land downgrading towards or at Sub-Grade 3a. Private and recreational fisheries. Popular bathing water. Abstractions for PWS supplying more than 20 m^3/day for human consumption and/or serves more than 50 people. Land that if flooded would affect between 11 and 100 residential, commercial and/or industrial properties. Land within or adjacent to a zone of significant active coastal erosion.
	Ecology Criteria	Site of Special Scientific Interest (SSSI) and protected species. Habitats recognised locally and regionally for their biodiversity and/or being good examples of their type.

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Receptor Sensitivity / Value	Receptor	Examples of Sensitivity Classes based on Table 8.~~Table 8.~~6 with Criteria Included
	Mineral Extraction Criteria	Any mineral extraction or construction activity that involves managing water from one location to another within a defined boundary via infiltration features (e.g. sumps, infiltration ditches and infiltration ponds) and requires water level controls.
Moderate	**Resilience Criteria**	Receptor is approaching capacity and once reached will temporarily change due to development. Shift in baseline conditions due to development will be ≥ 10%.
	Water Criteria	Locally significant water body or locally significant attribute of a water body. Providing an important yield of water and baseflow (dry weather flow) to surface water bodies. Watercourses not having a WFD classification shown in RBMP and with a Q_{95} flow ~~≤ ~~> 0.001 m^3/s. Flood Zone 2. Groundwater Catchment Source Protection Zone (SPZ) 3 and Secondary A Aquifers. Above a Principal Aquifer. Land where pollutants are present within soils due to previous use. Small unlicenced landfills and spoil heaps, infilled borrow pits, waste disposal areas within historic sites. Land that if disturbed, will cause water pollution and temporary harm via surface water and/or groundwater pathways.
	People, Industry & Agriculture Criteria	PWS abstractions, land in PWS Zone of Contribution (ZoC), ground source heat pumps. More vulnerable land uses2424. Unclassified amenity and recreational water use. Abstractions for PWS supplying less than 20 m3/day for human consumption and/or serves less than 50 people. Abstractions for agricultural use. Land that if flooded would affect 10 or fewer residential, commercial and/or industrial properties. Recreational private fishing.
	Ecology Criteria	Local Nature Reserve (LNR) and/or Site of Nature Conservation Interest (SNCI). Habitats recognised locally for their biodiversity.
	Mineral Extraction Criteria	Any mineral extraction or construction activity that involves managing water from one location to another within a defined boundary via infiltration features (e.g. sumps, infiltration ditches and infiltration ponds).

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Receptor Sensitivity / Value	Receptor	Examples of Sensitivity Classes based on Table 8.~~Table 8.~~6 with Criteria Included
Low	**Resilience Criteria**	Receptor is largely unaffected by development, fluctuations in condition largely unaffected. Shift in baseline conditions due to development will be < 10%.
	Water Criteria	Unclassified water body or unclassified attributes of water body. Low yield of water and baseflow (dry weather flow) to surface water bodies and private water supplies only (no public water supplies). No permanent baseflow. Surface water sewers. Watercourses not having a WFD classification shown in RBMP with a Q_{95} flow ≤ 0.001 m^3/s Flood Zone 1. Above a Secondary Aquifer. No known land quality concerns or by reason of previous land use, no reason to indicate land quality concerns.
	People, Industry & Agriculture	No PWS abstractions or ground source heat pumps. Water compatible land use, functional floodplain. Less vulnerable development[24~~24~~].
	Ecology Criteria	No sites of designated ecological interests.
	Mineral Extraction Criteria	Mineral extraction and construction work above water table. Surface water drainage alone is adequate.

** Impacts that would occur in the absence of effective hydrological intervention / mitigation measures OR in light of embedded mitigation within the Project Design and/or applied as good practice during construction as part of a Construction and Environmental Management Plan (CEMP). The above impacts are independent of mitigation measures that may or may not be in place.*

Magnitude of Impact Criteria

8.4.7 The predicted magnitude of impacts should be classified according to whether they are considered to be beneficial or adverse and either major, moderate, minor or negligible. This will provide a consistent approach to expressing the results of the assessments undertaken as part of the EIA. The terms used are defined as follows:

- beneficial - advantageous or positive change to an environmental resource or receptor;
- adverse - detrimental or negative change to an environmental resource or receptor;
- negligible – small, short-term and highly localised effect;
- minor – short-term or localised impact;
- moderate – long-term impact of more than local importance; and
- major - considerable long-term impact of more than district importance or in breach of recognised standards, policy or legislation.

8.4.8 The magnitude of impacts depends on concepts of scale and duration, examples of which are as follows:

- the scale and nature of the Scheme compared to the receptor, including the mix of hard and soft development;
- spatial extent of the effect - local, district, regional or national;
- temporal nature of the effect - frequency of occurrence, duration and intensity;
- nature of the effect - direct or indirect, permanent or temporary;
- whether it occurs in isolation or 'knocks on' and/or is cumulative;
- number of receptors affected; and
- performance of mitigation measures considering environmental standards.

8.4.9 The criteria for determining the magnitude of hydrological impacts are provided in Table 8.8. Note that criteria for lower levels of magnitude are

included within the qualifying criteria for higher levels of magnitude, therefore the highest level of magnitude appropriate to each receptor is selected.

8.4.10 A hydrological constraints map is developed, to ensure that relevant constraints are incorporated into the design of the infrastructure layout for the development.

8.4.11 The assessment of impacts and effects on the hydrological baseline due to the development is then undertaken using the following process:

- examination of infrastructure design, construction and operational methodologies;
- potential impacts are identified, using the magnitude criteria presented in Table 8.8 combined with the sensitivity criteria presented in Table 8.7, differentiating between short term construction impacts and long term operational and design impacts for each receptor; and
- for each potentially significant impact, mitigation measures are identified to avoid, minimise or remedy any adverse impacts and enhance any beneficial impacts.

Table 8.8 Magnitude Classification

Magnitude	Nature of change	Examples of Magnitude
Major	Adverse: loss of an attribute and/or significant decrease in the quality and integrity of an attribute Beneficial: creation of new attribute	**Resilience Criteria:** Adverse: the degree of change due to the project, significantly exceeds the present day natural variability within the receptor. E.g. variability in flow rates, storage volumes, water levels, water quality parameters (e.g. diurnal, lunar, seasonal, annual). Beneficial: the degree of change due to the project, restores the desired natural variability within the receptor. E.g. variability in flow rates, storage volumes, water levels, water quality parameters (e.g. diurnal, lunar, seasonal, annual). **Water Criteria:** Adverse: significant loss of flood storage; increase in peak flood level[26] (> 100 mm); significant reduction in groundwater recharge to a Principal Aquifer; frequent and significant exceedance of water quality standards. Beneficial: creation of new additional flood storage; decrease in peak flood level[26~~26~~] (> 100 mm); increase in groundwater recharge to a Principal Aquifer (e.g. SuDs or Artificial Storage and Recovery); regular compliance with water quality standards. **People, Industry and Agriculture**: Adverse: loss of a water supply (surface water or groundwater) (public or private) due to upstream abstraction or pollution; loss of agricultural land Grade 1 (Excellent) or Grade 2 (Good); loss of commercial fishery. Beneficial: sustainable introduction of a water supply (surface water or groundwater) (public or private); increase in agricultural land quality to Grade 1 (Excellent) or Grade 2 (Good); potential for new commercial fisheries. **Ecology Criteria**: Adverse: loss or significant derogation (including significant reduction in biodiversity) to designated sites such as SAC, SPA and Ramsar sites and/or to protected species population(s); significant decrease in WFD surface water ecological or chemical status or significant increase in time to achieve WFD 'Good' status; significant decrease in WFD groundwater qualitative or quantitative status or significant increase in time to achieve WFD 'Good' status. Beneficial: significant improvement in the nature and extent of qualifying criteria at SAC, SPA and Ramsar sites and/or of protected species population(s); significant increase in WFD surface water ecological or chemical status or significant decrease in time to achieve WFD 'Good' status; significant increase in WFD groundwater qualitative or quantitative status or significant decrease in time to achieve WFD 'Good' status. **Mineral Extraction Criteria**: Adverse: present day and/or future opportunities for mineral extraction are lost or significantly compromised (re: Local Authority Mineral Plans). Beneficial: present day and/or future opportunities for mineral extraction are created or significantly enhanced (re: Local Authority Mineral Plans).

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Magnitude	Nature of change	Examples of Magnitude
Moderate	Adverse: partial loss of an attribute and/or a decrease in quality and integrity of an attribute Beneficial: significant improvement to an attribute and/or a significant increase in quality and integrity of an attribute	**Resilience Criteria:** Adverse: the degree of change due to the project, exceeds the present day natural variability within the receptor. E.g. variability in flow rates, storage volumes, water levels, water quality parameters (e.g. diurnal, lunar, seasonal, annual). Beneficial: the degree of change due to the project, improves upon the desired natural variability within the receptor. E.g. variability in flow rates, storage volumes, water levels, water quality parameters (e.g. diurnal, lunar, seasonal, annual). **Water Criteria:** Adverse: loss of flood storage; increase in peak flood level*2626 (> 50 mm); reduction in groundwater recharge to a Principal Aquifer; exceedance of water quality standards. Beneficial: extension of existing flood storage; decrease in peak flood level*,2626 (> 50 mm); increase in groundwater recharge (e.g. SuDs); no requirement for routine water quality monitoring. **People, Industry and Agriculture**: Adverse: intermittent loss of a water supply (surface water or groundwater) (public or private) due to upstream abstraction; loss of agricultural land Grade 2 (Good); reduction in size or productivity of a commercial fishery. Beneficial: sustainable introduction of a water supply (surface water or groundwater) (public or private); increase in agricultural land quality to Grade 2 (Good); sustainable increase in size or productivity of commercial fishery. **Ecology Criteria**: Adverse: derogation (including reduction in biodiversity) to designated sites such as SAC, SPA and Ramsar sites and/or to protected species population(s); decrease in WFD surface water ecological or chemical status or increase in time to achieve WFD 'Good' status; decrease in WFD groundwater qualitative or quantitative status or increase in time to achieve WFD 'Good' status. Beneficial: improvement in the nature and extent of qualifying criteria at SAC, SPA and Ramsar sites and/or of protected species population(s); increase in WFD surface water ecological or chemical status or decrease in time to achieve WFD 'Good' status; increase in WFD groundwater qualitative or quantitative status or decrease in time to achieve WFD 'Good' status. **Mineral Extraction Criteria**: Adverse: present day and/or future opportunities for mineral extraction are compromised (re: Local Authority Mineral Plans). Beneficial: present day and/or future opportunities for mineral extraction are enhanced (re: Local Authority Mineral Plans).
Minor	Adverse: temporary loss of an attribute	**Resilience Criteria:**

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Magnitude	Nature of change	Examples of Magnitude
	and/or a temporary decrease in quality and integrity of an attribute Beneficial: temporary improvement to an attribute and/or a temporary increase in quality and integrity of an attribute	Adverse: the degree of change due to the project, occasionally exceeds the present day natural variability within the receptor. E.g. variability in flow rates, storage volumes, water levels, water quality parameters (e.g. diurnal, lunar, seasonal, annual). Beneficial: the degree of change due to the project, is within the desired natural variability of the receptor. E.g. variability in flow rates, storage volumes, water levels, water quality parameters (e.g. diurnal, lunar, seasonal, annual). **Water Criteria:** Adverse: flood storage unchanged; increase in peak flood level*,~~26~~26 (> 10 mm); reduction in groundwater recharge to a Secondary Aquifer; occasional exceedance of water quality standards. Beneficial: flood storage unchanged; decrease in peak flood level*,~~26~~26 (> 10 mm); potential increase in groundwater recharge (e.g. SuDs); water quality not relevant. **People, Industry and Agriculture**: Adverse: variable PWS (surface water or groundwater) due to upstream abstraction; some loss of agricultural land Grade 2 (Good); reduced private or recreational fishing. Beneficial: reliable maintenance of PWS (surface water or groundwater); increase in agricultural land quality to Grade 2 (Good); enhanced private or recreational fishing. **Ecology Criteria**: Adverse: derogation (including reduction in biodiversity) to designated sites such as SSSIs and/or to protected species population(s); potential for decrease in WFD surface water ecological or chemical status or potential for increase in time to achieve WFD 'Good' status; potential for decrease in WFD groundwater qualitative or quantitative status or potential increase in time to achieve WFD 'Good' status. Beneficial: improvement in the nature and extent of qualifying criteria at SSSIs and/or of protected species population(s); potential for increase in WFD surface water ecological or chemical status or potential for decrease in time to achieve WFD 'Good' status; potential for increase in WFD groundwater qualitative or quantitative status or potential decrease in time to achieve WFD 'Good' status. **Mineral Extraction Criteria**: Adverse: present day and/or future opportunities for mineral extraction are unaffected (refer to Local Authority Mineral Plans). Beneficial: present day and/or future opportunities for mineral extraction are unaffected (refer to Local Authority Mineral Plans).
Negligible	No measurable change to an	**Resilience Criteria:**

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Magnitude	Nature of change	Examples of Magnitude
	attribute (i.e. any variability is within natural range) or its quality or integrity (adverse or beneficial)	Adverse: the degree of change due to the project, does not exceed the present day natural variability within the receptor. E.g. variability in flow rates, storage volumes, water levels, water quality parameters (e.g. diurnal, lunar, seasonal, annual). Beneficial: the degree of change due to the project, is indistinguishable from the desired natural variability of the receptor. E.g. variability in flow rates, storage volumes, water levels, water quality parameters (e.g. diurnal, lunar, seasonal, annual). **Water Criteria:** Adverse: flood storage unchanged; increase in peak flood level*,[26~~26~~] (≤ 10 mm); no measurable reduction in groundwater recharge to a Secondary Aquifer; water quality not relevant. Beneficial: flood storage unchanged; decrease in peak flood level*,[26~~26~~] (≤ 10 mm); potential increase in groundwater recharge (e.g. SuDs); water quality not relevant. **People, Industry and Agriculture**: Adverse: no measurable change in PWS (surface water or groundwater) due to upstream abstraction; no measurable loss of agricultural land quality; no change in private or recreational fishing. Beneficial: reliable maintenance of PWS (surface water or groundwater); no change in agricultural land quality; no change in private or recreational fishing. **Ecology Criteria**: Adverse: no derogation (including no reduction in biodiversity) to Local Nature Reserves (LNR) or Sites of Nature Conservation Interest (SNCI); no decrease in WFD surface water ecological or chemical status or no potential for increase in time to achieve WFD 'Good' status; no potential for decrease in WFD groundwater qualitative or quantitative status or no potential increase in time to achieve WFD 'Good' status. Beneficial: small improvement in the nature and extent of qualifying criteria at LNR and/or SNCI; maintenance of WFD surface water ecological or chemical status or time to achieve WFD 'Good' status; maintenance of WFD groundwater qualitative or quantitative status or time to achieve WFD 'Good' status. **Mineral Extraction Criteria**: Adverse: present day and/or future opportunities for mineral extraction are unaffected (refer to Local Authority Mineral Plans). Beneficial: present day and/or future opportunities for mineral extraction are unaffected (refer to Local Authority Mineral Plans).

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Level of Effect

8.4.12 The level of an effect is based upon the sensitivity of the receptor(s) and the magnitude of the impact to that receptor. The manner in which sensitivity and magnitude are ultimately combined in order to determine the level of effect, is set out in Table 8.9.

Table 8.9 Significance Criteria

Sensitivity (Value) of Receptor	**Magnitude of Impact**			
	Negligible	**Minor**	**Moderate**	**Major**
Low	Negligible	Negligible	Minor	Minor
Moderate	Negligible	Minor	Moderate	Moderate
High	Negligible	Moderate	Moderate	Major
Very high	Negligible	Moderate	Major	Major

8.4.13 The criteria in Table 8.9 are applied based upon the principles of the Design Manual for Roads and Bridges[27] and follow guidance produced by the Institute of Environmental Management and Assessment[28].

8.4.14 A moderate level of effect or above are likely to be considered significant in terms of the EIA regulations. Where effects are initially identified as significant, the design of the development is amended where possible to mitigate the effect by following a mitigation hierarchy of: avoid, reduce, remediate and offset/compensate. Effects that are of a minor or negligible level of effect are generally judged to be not significant in EIA terms. Differentiations between categories in Table 8.9 are based upon the application of criteria explained above, in Table 8.7 and Table 8.8.

8.5 Assumptions and Limitations

8.5.1 The assessment has been undertaken primarily using desk-based information. The assessment is therefore reliant on third party data which is assumed to be correct.

8.5.2 PWS records have been provided by the relevant councils; however this is reliant upon the registration of supplies by the owners.

8.6 Baseline Conditions

8.6.1 The baseline hydrology, hydrogeology and geology relating to the Scheme have been assessed through a combination of desk-based studies, site walkovers, surveys and consultation. The future baseline is also discussed. This section also describes the likely future baseline conditions based on likely changes in climate and through future development.

8.6.2 Detailed descriptions of the baseline conditions are reported in the technical appendices to this chapter. These comprise:

- **ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.2]**;
- **ES Vol 2 Appendix 8-2: Water Framework Directive Assessment [EN010141/DR/6.2]**.
- **ES Vol 2 Appendix 8-3: Watercourse Crossing Assessment [EN010141/DR/6.2]**.

8.6.3 This section summarises the key findings of the Appendices and carries them forward to the impact assessment reported in Section 0.

Study Area

8.6.4 The Site extends to approximately 773 ha and for ease of reference has been subdivided into East Park Sites A to D in which all the proposed above ground infrastructure as part of the operational scheme will be located, see **ES Vol 3 Figure 1-2: Site References [EN010141/DR/6.3]**.

8.6.5 Impacts upon water quality are considered on a catchment basis. The watercourses draining the Site are presented in **ES Vol 3 Figure 8-1: Watercourses [EN010141/DR/6.3]**.

8.6.6 Flood risk is considered within the Site and to third parties outside of the Site using flood modelling results provided by the EA. Information on flood risk is provided by EA models and online mapping. (see **ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.1]** for more detailed summary of model data).

Desk Study Sources

8.6.7 The data sources used to complete the baseline description are listed in Table 8.10 below.

Table 8.10 Sources of Information

Topic	Source of Information
Topography	OS Terrain 50 contour mapping[29] 1m LiDAR[30]
Local Mapped Features	OS 1:25000 raster mapping[31] OS MasterMap[32]
Designated Nature and Conservation Sites	DEFRA Magic Maps[33]
Hydrogeology- Bedrock and Superficial Deposits	British Geological Survey (BGS) 1:50,000 Web Map Services online mapping[34]
Hydrogeology- Soils	Cranfield Soil and Agrifood Institute Soilscapes map[35.]
Flood Risk	Flood Map for Planning [36] Lower Ouse- Kym Hydraulic Modelling Results[37] Lower Great Ouse Flood Risk Modelling[38]
Water Quality	The Ouse Upper and Bedford Management Catchment Summary[39]
Water Resources	Data requests to the EA, Huntingdonshire and Bedfordshire Councils.

Surveys

8.6.8 A site walkover survey to ground truth the baseline data relating to hydrological aspects was carried out during the week commencing 30th June 2025. This visit also included a review of the proposed watercourse crossing locations.

Baseline Conditions

8.6.9 The baseline conditions for the Scheme are presented below:

Topography, Soils and Land Use

Topography

8.6.10 Topographically the Site is relatively flat, gently sloping in a north-easterly direction, as shown in **ES Vol 3 Figure 8-7: Topography [EN010141/DR/6.3]**, towards the Pertenhall Brook and the River Kym. There is a local topographic high within the west of Site (within Site A) near to the town of Riseley, with elevations exceeding 75m AOD.

Bedrock Geology

8.6.11 As shown on **ES Vol 3 Figure 8-5: Bedrock Geology [EN010141/DR/6.3]**, Oxford Clay underlies the entirety of the Site and outcrops at or near to the ground surface over much of the site area.

Superficial Geology

8.6.12 British Geological Survey (BGS) mapping of superficial geology shows a diversity of sedimentary deposits. This includes terrace deposits of sand and gravel near to the River Kym, covering the northern areas of East Park Site A, B and C. The southern areas of East Park Site B and D and the grid connection to Eaton Socon Substation are located on diamicton outcrop. Online mapping indicates no peat is present at the Site. The BGS superficial deposits mapping for the Site is shown in **ES Vol 3 Figure 8-6: Superficial Geology [EN010141/DR/6.3]**.

Land Use and Designated Sites

8.6.13 The Site is located within arable farmland.

8.6.14 There are no statutory nature conservation designations within the Site (see **ES Vol 3 Figure 8-8: Designated Sites [EN010141/DR/6.3]**). The closest is the Swineshead Wood Site of Special Scientific Interest (SSSI) some 950m north-west of East Park Site A, located on the north side of the Pertenhall Brook, and at a higher elevation than the Site.

8.6.15 Perry Woods SSSI is located circa 1.8km north of East Park Site C, significantly above the level of the River Kym (at least 12m above) and on the opposite side of the watercourse from the Site.

8.6.16 Grafham Water SSSI is located circa 2.8km north of East Park Site C. This is within the Diddington Brook catchment area (and so is north of the watershed of the River Kym catchment).

8.6.17 Little Paxton Wood SSSI is located 1.6km to the east of Site D. It is to the north of the River Kym and land elevations within this site are at least 10m above the watercourse at this location, on the opposite river bank to the Scheme.

8.6.18 Little Paxton Pits Nature Reserve is located 4km to the east of Site D. The Pits are hydraulically connected to the River Great Ouse, though this is some significant distance downstream of the Site.

Surface Hydrology, Site Drainage and Flooding

Surface Hydrology and Site Drainage

8.6.19 The Site is located to the west of St. Neots and sits within the wider catchment of the River Great Ouse. Several tributaries drain the Site, including the Pertenhall Brook, Duloe Brook, South Brook and the River Kym (see **ES Vol 3 Figure 8-1: Watercourses [EN010141/DR/6.3]**).

Flood Risks

8.6.20 The EA fluvial flood map is shown in **ES Vol 3 Figure 8-2: Environment Agency Fluvial Flood Map [EN010141/DR/6.3]**. The Pertenhall Brook intersects Site A to the north, however the area around the river channel is relatively steep in this region, such that the floodplain is relatively constrained, with only a small land area affected by Flood Zones 2 and 3. The Keysoe Brook and one other minor watercourse (tributary of the Pertenhall Brook) pass through Site B, flowing south to north. These have very small flood extents, covering only a small fraction of the Site. The floodplain for the River

Kym is relatively more extensive near to Site C, however this land parcel is offset from this watercourse to the north and the floodplain on the northern bank is far larger than to the south. Only the northern periphery of Site C is thus affected by fluvial flooding, which again only constitutes a small fraction of the total land within the Site. The grid connection crosses the Duloe Brook at one location, with flood extents at this location being confined to a 10m corridor.

8.6.21 A detailed assessment of the fluvial flood risks was carried out using the 1D/2D Lower Ouse River Kym Catchment Model and Modelling of various ordinary watercourses of the River Kym (Lower Great Ouse Flood Risk Mapping) received from the EA in May 2025. The model data confirmed the fluvial flood risks to sections of the Site and that the critical infrastructure is located outside Flood Zones 2 and 3, see **ES Vol 3 Figure 8-3: Modelled Flood Levels (0.1% AEP) [EN010141/DR/6.3]**. A small section of flooding near the Kangaroo Farm has been erroneously included within the fluvial flood maps, where it instead shows pluvial risk. The EA acknowledged this in liaison through May 2025. This is discussed in more detail in **ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.2]**.

8.6.22 There exist many drainage channels within the Site which do not have a catchment large enough to be captured within the fluvial mapping. The flood risk from these is therefore captured by the EA surface water flood maps (pluvial flood maps), which indicate large areas of the Site are expected to experience surface water flooding. Note that the recent surface water mapping provided by the EA has now excluded flood areas which overlap with the fluvial model extents and are clearly of fluvial origin. It is noted that due to the relatively flat topography at the Site, flood extents from the channels are relatively extensive for events down to the 1 in 30yr return period, see **ES Vol 3 Figure 8-4: Environment Agency Pluvial Flood Map [EN010141/DR/6.3]**.

8.6.23 A review of the EA reservoir flood risk map shows the area is not at risk of reservoir flooding.

8.6.24 A review of available BGS Borehole Records[40] and the bedrock geology of the Site indicate the risk of groundwater flooding is low across the Site.

Hydrogeology

8.6.25 BGS hydrogeological mapping ~~suggests no significant groundwater aquifers are present at the Site (Rocks with essentially no groundwater), a product of clay bedrock underlying the Site~~indicates that the bedrock geology beneath the Site is classified as rocks with essentially no groundwater, reflecting the predominance of clay formations with essentially no significant groundwater resource. However, this designation applies only to the bedrock and does not represent the hydrogeological characteristics of the superficial deposits.

8.6.26 Aquifer Designation Mapping ~~is also~~ provided by BGS for both bedrock and superficial drift deposits, shown in **ES Vol 3 Figure 8-10: Aquifer Designation Mapping [EN010141/DR/6.3]**, shows that while the~~. The~~ bedrock is classified as 'Unproductive', areas of the superficial geology across the Site can support local water supplies and may provide source of baseflow to nearby rivers.~~underlying the entirety of the Site is classified as being 'Unproductive', reflective of the clay bedrock.~~

8.6.27 Reviewing the superficial drift deposits, there are variable levels of designation throughout the Site. ~~For those a~~Areas in proximity to the River Kym/Pertenhall Brook~~, there~~ are designated as 'Secondary A' ~~designations~~aquifers, ~~which~~ indicating~~es~~ formations ~~which may be~~ capable of providing ~~for~~ local water supplies and ~~possibly~~ contributing to river baseflows.

~~8.6.27~~8.6.28 The ~~majority~~ remainder of the Site, away from major watercourses, ~~is either classified as having~~consists of 'unproductive' strata or 'Secondary (Uundifferentiated)' superficial drift aquifers.~~. These may be described as being unable to provide usable water supplies (or have no dependent surface water/wetland features), or in the case of 'Secondary (undifferentiated)' this is where it is not possible to apply either Secondary A or B definition, because of the variable characteristics of the rock type. These also have low value in water resource terms~~Unlike unproductive strata, which have negligible

permeability, Secondary (Undifferentiated) layers are classified as such because they may possess variable characteristics common to both Secondary A and B aquifers. Consequently, these areas are recognised as having some water resource potential and are not considered 'unproductive'. Unproductive designations are limited specifically to areas where the superficial deposits are absent or consist of low-permeability strata (such as a certain glacial till) that do not support significant groundwater flow.

Water Quality and Water Resources

Water Quality

~~8.6.28~~8.6.29 The area lies within the Ouse Upper and Bedford Management Catchment (within the Anglian River Basin District). Within this, the Site straddles four river water body catchments. The water bodies and their reported Cycle 3 WFD[41] status are outlined below:

- The Kym water body catchment covers East Park Site C and much of East Park Site B and D. It has a moderate ecological status, though failed in chemical indicators in 2019 (due to polybrominated diphenyl ethers) and was untested in 2022 for chemical indicators (UK environmental regulators like the EA no longer required a chemical status assessment for these ubiquitous, legacy pollutants in routine WFD classification reporting – reflective of these not being reflective of current management efforts and tending to mask improvements in more manageable pollutants.
- The Duloe Brook straddles the upper section of the grid connection and southern area of East Park Site D. It has a moderate ecological status, though failed in chemical indicators in 2019 (due to perfluorooctane sulphonate and polybrominated diphenyl ethers) and was untested in 2022 for chemical indicators (as above).
- The Pertenhall Brook covers East Park Site A and much of Site B. It has a moderate ecological status, though failed in chemical indicators in 2019 (due to polybrominated diphenyl ethers) and was untested in 2022 for chemical indicators (as above).

- The Colmworth Brook covers the southern tip of the grid connection at the Eaton Socon Substation and has been assigned a moderate ecological status, though failed in chemical indicators in 2019 (due to polybrominated diphenyl ethers) and was untested in 2022 for chemical indicators (as above).

~~8.6.29~~8.6.30 These tributaries ultimately drain to the Ouse (Roxton to Earith) WFD water body (ID: GB105033047921) to the east of the Site.

~~8.6.30~~8.6.31 The area lies within a Nitrate Vulnerable Zone (Great Ouse and Huntingdon River Gravels), which is an area designated as being at risk from agricultural nitrate pollution.

Water Resources

~~8.6.31~~8.6.32 The Order Limits are outside of any Source Protection Zones (designated as such under the Water Framework Directive). It is however within a Drinking Water Safeguard Zone (for surface water), which is a wider designation that is given to the contributing catchments of Drinking Water Protected Areas, where these are at risk of failing drinking water protection objectives. These include a surface water safeguard zone for the River Great Ouse (Roxton to Earith), which includes the Site area and is associated with an abstraction from the River Great Ouse at Offord, which is approximately 7km north-east of the Site boundary (downstream in the River Great Ouse catchment). The reason for being 'at risk' is because of total pesticides and individual pesticides (such as metaldehyde, propyzamide, carbetamide and quinmerac), as a result of agricultural activities within the contributing catchment. The Scheme will have no impact on such risks as there will be no use of pesticides within the Site.

~~8.6.32~~8.6.33 Several small farmhouses have been identified close to and within the Site, which may be using PWS. PWS abstracting less than 20 m^3/day do not require an abstraction licence and are simply registered by local authorities for reasons relating to public health. Contact has been made with Huntingdonshire and Bedford Councils to obtain PWS data records.

Bedfordshire responded on the 20th September 2023 confirming three properties with a PWS within the given search radius of the Site. Huntingdonshire responded on the 18th September 2023 to confirm no properties within their area. The PWS records provided by Bedfordshire Council have been assessed for likely impact from the development in Section 8.8, based on potential contamination pathways from the Site.

~~8.6.33~~8.6.34 Information on licenced water abstractions was given by the EA in July 2024 within a 5km radius of the Site. This data showed there to be a number of licenced surface water abstractions near to and downstream of watercourses within the Site boundary (see **ES Vol 3 Figure 8-9: Licenced Abstractions [EN010141/DR/6.3]**). The abstractions downstream of the Site were all licenced for either spray irrigation (agricultural use) or electricity generation (hydropower).

Future Baseline

~~8.6.34~~8.6.35 The climate is likely to become more variable, in line with observed historical and predicted changes in global climate. In general terms, climate change will lead to more intense and extreme rainfall events. This will increase peak flows in rivers whilst more extreme periods of dry weather will further reduce low flows. The area is largely within Flood Zone 1, with areas of Flood Zones 2 and 3 along the northern boundaries, it is possible that these areas will become prone to more frequent and severe flooding events. Critical infrastructure is to be located outside Flood Zones 2 and 3. Consideration to the impact of climate change on flood risk to the Site is detailed in **ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.2]**. Allowances have been made for climate change impacts on rainfall, runoff and water management as detailed in the **oSWMP [EN010141/DR/7.13]**. Periods of dry weather or drought will also be likely to increase, however, water requirements during operation of the Scheme are minor.

Summary of Baseline, and Sensitivity of Receptors

~~8.6.35~~8.6.36 Table 8.11 provides a summary of the sensitivity of baseline features within the Site. The sensitivity of the receptors are based upon the criteria presented in Table 8.11.

Table 8.11 Baseline Sensitivity

Receptor	Sensitivity	Criteria Applied
Surface Water		
River Kym (WFD Water body objectives) Colmworth Brook (WFD Water body objectives) Duloe Brook (WFD Water body objectives) Pertenhall Brook (WFD Water body objectives)	Moderate	Regionally significant water bodies. Designated water protection zones, providing a high quality yield of water and important baseflow (dry weather flow) to surface water bodies.
Streams and drainage ditches	Moderate	Streams and ditches across the Site considered cumulatively, contribute an important baseflow to the River Kym, which is a WFD Water body.
Designated Sites		
Grafham Water SSSI Little Paxton Wood SSSI Perry Woods SSSI Swineshead Wood SSSI	High	SSSIs and protected species. Habitats recognised locally and regionally for their biodiversity and/or being good examples of their type.
Little Paxton Pits LNR	Moderate	Local nature reserve. Habitats recognised locally for their biodiversity.
Groundwater		
Kellaways and Oxford Clay Bedrock (Rocks with essentially no groundwater)	Low	Geology formation with low to no groundwater yield (Unproductive).
Superficial Drift Deposits	~~Low~~Moderate	Superficial drift deposits near the main watercourses (River Kym and Pertenhall Brook) designated as 'Secondary A', whereas further out deposits are either 'Secondary Undifferentiated' or 'Unproductive'.
NVZ (Great Ouse and Huntingdon River Gravels)	High	Area at risk of nitrate pollution.
Water Supplies		
Unlicenced PWS(where present and deemed to be at risk)	Moderate	PWS abstractions, each supplying less than 20 m^3/day for human consumption and/or serving less than 50 people.

Receptor	Sensitivity	Criteria Applied
Licenced PWS (Spray irrigation for agricultural use)	Moderate	Abstractions for agricultural use.
Public Water Supplies (Offord abstraction)	Very High	Public water supply abstractions.
Flood Risk		
Residential properties	Moderate	Relatively rural land up and downstream of the Site on the Pertenhall Brook, with only individual properties (rather than clusters) within the existing 1000yr flood extent. Dwellings designated 'more vulnerable' according to NPPF.

8.7 Embedded Mitigation and Enhancement Measures

Embedded Mitigation

8.7.1 The design of the Scheme (embedded mitigation) has involved an iterative process between the engineering and environmental teams, to ensure that potential impacts upon the baseline environment have been avoided or minimised wherever possible (prior to considering mitigation). Where significant effects are still likely, applied mitigations in the form of standard best practice measures are proposed which would be incorporated into the construction, operation and decommissioning of the Scheme via the implementation of a series of certified 'control documents'. Control documents include the documents which provide specific and detailed practical controls on the Scheme. This includes the:

- **outline Construction Environmental Management Plan [EN010141/DR/7.3]**;
- **outline Operational Environmental Management Plan [EN010141/DR/7.5]**;
- **outline Decommissioning Environmental Management Plan [EN010141/DR/7.6]**;
- **outline Landscape and Ecological Management Plan [EN010141/DR/7.7]**;
- **outline Soil Management Plan [EN010141/DR/7.9]**;
- **outline Battery Safety Management Plan [EN010141/DR/7.10]**; and
- **outline Surface Water Management Plan [EN010141/DR/7.13]**.

8.7.2 Post-consent, these outline plans will be developed into final plans which must be in substantial accordance with the outlines and will require approval by the local planning authorities. The Scheme must be undertaken in accordance with the approved plans. This is secured via a Requirement in Schedule 2 of the **draft DCO [EN010153/DR/3.1]**.

Site Layout

8.7.3 The Scheme includes a number of buffers that are embedded into the layout and secured by the limit of deviation shown for the various Work Packages in the **Works Plan [EN010141/DR/2.3]**, and this includes a minimum 10m buffer between the fenceline of the solar farm and watercourses.

8.7.4 The buffers are repeated on the Illustrative Landscape Proposals drawing at **Appendix A** of the **outline Landscape and Ecological Management Plan (oLEMP) [EN010141/DR/7.7]**. The oLEMP is a control document that will be certified as part of the Development Consent Order (DCO) and implemented via a Requirement in Schedule 2 of the **draft DCO [EN010141/DR/3.1]**. Should the Scheme be consented, the DCO will require that a final Landscape and Ecological Management Plan (LEMP) in substantial accordance with this oLEMP is prepared and approved by the LPA prior to commencing the relevant construction phase. The final landscape proposals must therefore be in substantial accordance with those shown on the Illustrative Landscape Proposals at **Appendix A** of the **oLEMP [EN010141/DR/7.7]**.

Flood Risk

8.7.5 The current, pre-development, risk of flooding across the site is predominantly low, with areas of flood risk limited to areas close by watercourses.

8.7.6 All critical infrastructure (watercourse crossings aside) is located outside of Flood Zones 2 & 3 (fluvial flood zones for planning), see **ES Vol 2 Appendix 8-1: Flood Risk Assessment [EN010141/DR/6.2]**.

8.7.7 Panels will be designed to be set above the pluvial flood level. The maximum height of the panels along the top (northern) edge of the array will be 3m above existing ground levels. The minimum height along the bottom (southern) edge of the array will be at least 0.8m above the existing ground levels. Furthermore, the panel bottom edges will be set a minimum of 200mm above the maximum surface water levels for the design, i.e. the 1.0% climate change event **ES Vol 2 Appendix 8-1: Flood Risk Assessment**

[EN010141/DR/6.2] and Table 8.2 Item 1.34. This is secured by the **Design Parameters and Principles Document [EN010141/DR/7.1]**.

Surface Water and Drainage

8.7.8 SuDS features have been incorporated into the design to control surface water runoff from these features to greenfield rates. The **oSWMP [EN010141/DR/7.13]** details the principles of runoff control for the Scheme. Similarly, perimeter SuDS features around solar arrays have been outlined, as has drainage alongside access tracks.

8.7.9 The Site would be developed in phases wherever possible with surface water run-off initially managed through a range of sediment treatment measures and temporary SuDS to reduce the run-off rate and volume of discharge to the local drainage network

8.7.10 Temporary drainage pathways would be established to direct surface water away from at risk areas and towards the surface water drainage network via sediment controls. The aim of the drainage scheme would be to ensure that water from surrounding land is excluded from the area of development and where this is not possible the volumes draining onto the Site are significantly reduced. There will be no unapproved discharge of foul or contaminated drainage from the Site either to groundwater or any surface waters, whether direct or via a soakaway.

8.7.11 Clay plugs would be inserted within cable trenches at a frequency to suit the specific location to prevent gullying of trenches and preferential routing.

8.7.12 A programme of surface water quality monitoring would be undertaken before and during the construction phase to provide assurance as to the absence of water quality impacts.

8.7.13 Temporary land take areas (construction compound with car parking, temporary storage areas, welfare facilities etc.) will be fully reinstated following the construction period to reduce areas of semi-impermeable

surfaces. Temporary land take areas will be re-graded with soil to a natural profile (where required) and re-vegetated.

Watercourse Crossings

8.7.14 The design of watercourse crossings is discussed within **ES Vol 2 Appendix 8-3: Watercourse Crossing Assessment [EN010141/DR/6.2]**. The cross-sectional area of crossings (whether culverts or open-span structures) will be sized at the detailed design stage, according to appropriately modelled storm flows for the upstream catchments, selected based upon the vulnerability of potential receptors.

8.7.15 The design of crossing points will also ensure that hydraulic gradients do not disconnect watercourses at times of low flow and that bed profiles would remain unchanged, to prevent a change in geomorphology at each crossing point.

Water Quality, Control of Pollution and Emergency Response

8.7.16 The potential impact on the water quality of the sub catchments draining the construction area, will be mitigated through the implementation of the **oSWMP [EN010141/DR/7.13]**. The oSWMP includes sections dealing with pollution prevention measures, water quality monitoring and procedures in the event of an accidental spillage, key measures to be adopted include:

- Perimeter ditches, silt fencing and hay bales will serve the dual purpose of diverting flood flows to control points, as well as providing a means of filtering out entrained sediment from working areas.
- At all crossings silt fences and/or hay bales (or similar) will be erected along watercourse banks (adjacent, upstream and downstream of crossing locations) in order to intercept, settle and attenuate sediment entrained runoff during construction and trafficking.
- Other than when constructing watercourse crossings (where short-term storage of materials may be required), stockpiling of materials and

machinery during construction will not be carried out within the fluvial floodplain (i.e. within Flood Zones 2 & 3).

Enhancement

8.7.17 As outlined in Paragraph 8.6.31~~8.6.30~~, the Site is currently situated in a Nitrate Vulnerable Zone. Transition from current agricultural land practices (which may involve use of fertilisers and therefore nitrate loading to water bodies) would potentially provide enhancement to local water bodies due to the elimination of such practices.

8.8 Assessment of Likely Impacts and Effects

Construction Phase

8.8.1 In light of the embedded and applied mitigation measures to be deployed during construction, a build-up and summary of the likely impacts and effects and their significance is provided in Table 8.12.

Table 8.12 Construction Phase Impact Assessment

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
Potential contamination of water bodies due to accidental spillage of fuel, oils and wet concrete and/or unforeseen transport of suspended sediment and siltation from earthworks and / or construction compounds	River Kym Colmworth Brook Duloe Brook Pertenhall Brook – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways and provide appropriate level of treatment of runoff at source before entering watercourses. Implementation via the CEMP and SWMP. **Minor.**	**Minor Adverse**	**Not significant**
	Streams and drainage ditches – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways and provide appropriate level of treatment of runoff at source before entering watercourses. Implementation via the CEMP and SWMP. **Minor.**	**Minor Adverse**	**Not significant**
	Grafham Water SSSI Little Paxton Wood SSSI Perry Woods SSSI Swineshead Wood SSSI – **High Sensitivity**	**Not applicable**, sites are not hydraulically connected to the Scheme.	**Not applicable**	**Not applicable**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
	Little Paxton Pits LNR – **Moderate Sensitivity**	**Not applicable**, sites are not hydraulically connected to the Scheme.	**Not applicable**	**Not applicable**
	Kellaways and Oxford Clay (rocks with essentially no groundwater) – **Low Sensitivity**	No designated groundwater bodies underlying the Site. **Negligible**.	**Negligible**	**Not significant**
	Superficial Drift Deposits (limited and variable groundwater availability) – ~~Low~~ Moderate **Sensitivity**	Embedded mitigation minimises exposure to groundwater. Implementation via the CEMP and SWMP. **Negligible.**	**Negligible**	**Not significant**
	NVZ (Great Ouse and Huntingdon River Gravels) - **High Sensitivity**	**Not applicable**, nitrates not used in solar farm operational activities.	**Not applicable**	**Not applicable**
	Private water supplies (unlicenced, where present and deemed to be at risk) – **Moderate Sensitivity**	**Not applicable,** not hydraulically connected to the Site.	**Not applicable**	**Not applicable**
	Private water supplies (licenced, spray irrigation for agricultural use) – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways and provide appropriate level of treatment of runoff at source	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
		before entering watercourses. Implementation via the CEMP and SWMP. **Negligible.**		
	Public water supplies (Offord Abstraction) – **Very High Sensitivity**	Water supply is 7 km downstream of the Site, sufficient buffer to protect it from the Scheme, in addition to which SuDS design will preserve natural drainage patterns on the Site and cessation of agricultural land use will eliminate the use of fertilisers (nitrates). Implementation via the CEMP and SWMP. **Negligible.**	**Negligible**	**Not significant**
Potential increase in flood risk due to increased runoff, reduction in floodplain storage and/or conveyance.	Residential properties Rural land use, occasional individual dwellings **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Implementation via the CEMP and SWMP. **Minor.**	**Minor Adverse**	**Not significant**
Potential impact upon water resources due to change in water availability (quantity). Water use requirements (abstractions) for facilities at	River Kym Colmworth Brook Duloe Brook Pertenhall Brook – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Implementation via the CEMP and SWMP.	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
construction compound. Impact upon recharge rates to local water bodies.		Water supply will be drawn from a licenced source. **Minor.**		
	Streams and drainage ditches – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Implementation via the CEMP and SWMP. Water supply will be drawn from a licenced source. **Minor.**	**Negligible**	**Not significant**
	Grafham Water SSSI Little Paxton Wood SSSI Perry Woods SSSI Swineshead Wood SSSI – **High Sensitivity**	**Not applicable**, sites are not hydraulically connected to the Scheme.	**Not applicable**	**Not applicable**
	Little Paxton Pits LNR – **Moderate Sensitivity**	**Not applicable**, sites are not hydraulically connected to the Scheme.	**Not applicable**	**Not applicable**
	Kellaways and Oxford Clay (rocks with essentially no groundwater) – **Low Sensitivity**	No designated groundwater bodies underlying the Site. **Negligible**.	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
	Superficial Drift Deposits (limited and variable groundwater availability) – ~~Low~~ Moderate **Sensitivity**	Water supply will be drawn from a licenced source. **Negligible.**	**Negligible**	**Not significant**
	NVZ (Great Ouse and Huntingdon River Gravels) - **High Sensitivity**	**Not applicable** to water quantity assessments	**Not applicable**	**Not applicable**
	Private water supplies (unlicenced, where present and deemed to be at risk) – **Moderate Sensitivity**	**Not applicable**, not hydraulically connected to the Site.	**Not applicable**	**Not applicable**
	Private water supplies (licenced, spray irrigation for agricultural use) – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways Implementation via the CEMP and SWMP. Water supply will be drawn from a licenced source. **Minor.**	**Negligible**	**Not significant**
	Public water supplies (Offord Abstraction) – **Very High Sensitivity**	Water supply is 7 km downstream of the Site, sufficient distance that impacts at this sub catchment would be insignificant. SuDS design will preserve natural drainage patterns on the	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
		Implementation via the CEMP and SWMP. Water supply will be drawn from a licenced source. **Negligible.**		

Operational Phase

8.8.2 In light of the embedded and applied mitigation measures to be deployed during operation, a build-up and summary of the likely impact and effects and their significance is provided in Table 8.13.

Table 8.13 Operational Phase Impact Assessment

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
Potential contamination of water bodies due to erosion, transport and siltation of suspended material (particularly around watercourse crossings) and/or accidental release of firewater from BESS facility.	River Kym Colmworth Brook Duloe Brook Pertenhall Brook – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways and provide appropriate level of treatment of runoff at source before entering watercourses. Additional assurances for BESS facility in case of contaminated fire water. Implementation via the SWMP. **Negligible.**	**Negligible**	**Not significant**
	Streams and drainage ditches – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways and provide appropriate level of treatment of runoff at source before entering watercourses. Additional assurances for BESS facility in case of contaminated fire water. Implementation via the SWMP. **Negligible.**	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
	Grafham Water SSSI Little Paxton Wood SSSI Perry Woods SSSI Swineshead Wood SSSI – **High Sensitivity**	**Not applicable**, sites are not hydraulically connected to the Scheme.	**Not applicable**	**Not applicable**
	Little Paxton Pits LNR – **Moderate Sensitivity**	**Not applicable**, sites are not hydraulically connected to the Scheme.	**Not applicable**	**Not applicable**
	Kellaways and Oxford Clay (rocks with essentially no groundwater) – **Low Sensitivity**	No designated groundwater bodies underlying the Site. **Negligible**.	**Negligible**	**Not significant**
	Superficial Drift Deposits (limited and variable groundwater availability) – ~~Low~~ Moderate **Sensitivity**	Embedded mitigation minimises exposure to groundwater. **Negligible.**	**Negligible**	**Not significant**
	NVZ (Great Ouse and Huntingdon River Gravels) - **High Sensitivity**	**Not applicable**, nitrates not used in solar farm operational activities.	**Not applicable**	**Not applicable**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
	Private water supplies (unlicenced, where present and deemed to be at risk) – **Moderate Sensitivity**	**Not applicable**, not hydraulically connected to the Site.	**Not applicable**	**Not applicable**
	Private water supplies (licenced, spray irrigation for agricultural use) – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways and provide appropriate level of treatment of runoff at source before entering watercourses. Additional assurances for BESS facility in case of contaminated fire water. Implementation via the SWMP. **Negligible.**	**Negligible**	**Not significant**
	Public water supplies (Offord Abstraction) – **Very High Sensitivity**	Water supply is 7 km downstream of the Site, sufficient buffer to protect it from the Scheme, in addition to which SuDS design will preserve natural drainage patterns on the Site and cessation of agricultural land use will eliminate the use of	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
		fertilisers (nitrates). Implementation via the SWMP. **Negligible.**		
Potential increase in flood risk due to increased runoff, reduction in floodplain storage and/or conveyance.	Residential properties Rural land use, occasional individual dwellings **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Greenfield runoff rates to be maintained. Implementation via the SWMP. **Negligible.**	**Negligible**	**Not significant**
Potential impact upon water resources due to change in water availability (quantity). Water use requirements (abstractions) for site facilities and washing of panels. Potential impact upon recharge rates of local water bodies.	River Kym Colmworth Brook Duloe Brook Pertenhall Brook – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Rainfall collection tanks to provide for some operational requirements. Implementation via the SWMP. Water supply will be drawn from a licenced source. **Negligible.**	**Negligible**	**Not significant**
	Streams and drainage ditches – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Rainfall collection	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
		tanks to provide for some operational requirements. Implementation via the SWMP. Water supply will be drawn from a licenced source. **Negligible.**		
	Grafham Water SSSI Little Paxton Wood SSSI Perry Woods SSSI Swineshead Wood SSSI – **High Sensitivity**	**Not applicable**, sites are not hydraulically connected to the Scheme.	**Not applicable**	**Not applicable**
	Little Paxton Pits LNR – **Moderate Sensitivity**	**Not applicable**, sites are not hydraulically connected to the Scheme.	**Not applicable**	**Not applicable**
	Kellaways and Oxford Clay (rocks with essentially no groundwater) – **Low Sensitivity**	No designated groundwater bodies underlying the Site. **Negligible**.	**Negligible**	**Not significant**
	Superficial Drift Deposits (limited and variable groundwater availability) – ~~Low~~ Moderate **Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Rainfall collection tanks to provide for some	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
		operational requirements. Implementation via the SWMP. Water supply will be drawn from a licenced source. **Negligible.**		
	NVZ (Great Ouse and Huntingdon River Gravels) - **High Sensitivity**	**Not applicable** to water quantity assessments	**Not applicable**	**Not applicable**
	Private water supplies (unlicenced, where present and deemed to be at risk) – **Moderate Sensitivity**	**Not applicable**, not hydraulically connected to the Site.	**Not applicable**	**Not applicable**
	Private water supplies (licenced, spray irrigation for agricultural use) – **Moderate Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Rainfall collection tanks to provide for some operational requirements. Implementation via the SWMP. Water supply will be drawn from a licenced source. **Negligible.**	**Negligible**	**Not significant**

Potential Impact	Receptors & Sensitivity (independent of the Scheme)	Magnitude of Impact (accounting for embedded and applied mitigation)	Resulting Level of Effect	Significance
	Public water supplies (Offord Abstraction) – **Very High Sensitivity**	Embedded SuDS design to replicate natural drainage pathways. Rainfall collection tanks to provide for some operational requirements. Implementation via the SWMP. Water supply will be drawn from a licenced source. **Negligible.**	**Negligible**	**Not significant**

Decommissioning

8.8.3 Residual effects during decommissioning will be similar (and no worse) to those during construction and have therefore not been assessed separately It is considered that the decommissioning effects of the Scheme would essentially mirror the Construction Phase. An **outline Decommissioning Environmental Management Plan (oDEMP) [EN010141/DR/7.6]** has been prepared and this will be secured as a requirement of the DCO to be approved by the Local Planning Authorities (LPAs) prior to decommissioning.

8.9 Additional Mitigation and Monitoring

Construction

8.9.1 Measures to protect the construction works and other receptors from water quality and flooding impacts during construction are outlined within the **oSWMP [EN010141/DR/7.13]** and **outline Construction Environmental Management Plan (oCEMP) [EN010141/DR/7.3]**. The oSWMP and oCEMP are included within the Application Documents. Further additional measures concerning monitoring (as precautionary measures) are summarised as follows:

- Monitoring of ground disturbance, both in relation to areas where ground will be disturbed and where stockpiled soils will be managed. Monitoring measures will include checks on perimeter bunds and covering of soil stockpiles to limit exposure to rainfall, as commonly deployed additional mitigation measures.
- Monitoring of ambient water levels in excavations for the substation, BESS and construction compounds, to ensure the excavations do not fill with water. Also, monitoring of cut-off drains or dewatering works (removing free water) will be undertaken, as will the monitoring of buffer zones around watercourses.
- Regular monitoring, recording and reporting of stream water quality at key locations to be agreed with EA and as described in the oCEMP.

Operation

8.9.2 Provisions within the designed drainage system for the Site have reduced flood risks to negligible, as described in Table 8.12 (construction and decommissioning phases) and Table 8.13 (operational phase).

8.9.3 In terms of water quality, regular monitoring, recording and reporting of stream water quality at key locations will be agreed with the EA and carried out for a period following construction.

8.9.4 Provisions have been made within the drainage system around the BESS to mitigate the potential adverse effects of battery fire water. These arrangements are detailed within **ES Vol 1 Chapter 2: The Scheme [EN010141/DR/6.2]** and the **oSWMP [EN010141/DR/7.13]**, making use of SuDS features to ensure any fire water is intercepted and directed to an attenuation pond which will employ a cutoff sluice to isolate collected fire water and prevent onward migration to surface water bodies. An **outline Battery Safety Management Plan [EN010141/DR/7.10]** is also provided to further manage contamination risks from this feature.

8.10 Residual Effects

Construction

8.10.1 The potential impacts upon receptors during the construction phase of the Scheme are considered within Table 8.12 and takes into account the embedded mitigation measures described in Section 8.7.

8.10.2 No significant residual effects during construction of the Scheme, upon hydrology and flood risk, have been identified as a result of the assessment presented in Table 8.12.

Operation

8.10.3 The potential impacts upon receptors during the operational phase of the Scheme are assessed within Table 8.13 and takes into account the embedded mitigation measures, as described in Section 8.7.

8.10.4 No significant residual effects during operation of the Scheme, upon hydrology and flood risk, have been identified as a result of the assessment presented in Table 8.13.

Decommissioning

8.10.5 Residual effects during decommissioning will be similar (and no worse) to those during construction and have therefore not been assessed separately.

8.11 Cumulative Effects

8.1.1 The cumulative assessment has considered the potential for cumulative effects on hydrological resources as a result of the Scheme in combination with the cumulative schemes set out in **ES Vol 2 Appendix 4-5: Short List of Other Development [EN010141/DR/6.2]**.

8.1.2 The cumulative assessment is reported in **ES Vol 1 Chapter 17: Cumulative and In-Combination Effects [EN010141/DR/6.1]** and concludes that there would be no significant cumulative effects on hydrological resources as a result of the Scheme in combination with any cumulative scheme. The residual effects of the Scheme would not be changed as a result of any of the cumulative schemes.

8.1.3 An assessment of the in-combination effects arising from the interaction and combination of different residual environmental effects of the Scheme affecting a single receptor is reported in Section 17.5 of **ES Vol 1 Chapter 17: Cumulative and In-Combination Effects [EN010141/DR/6.1]**.

8.12 Conclusion

8.12.1 This chapter has considered the following:

- Water quality impacts and flood risks associated with watercourse crossings;
- Water quality impacts and flood risks associated with watercourses draining the Site Area;
- Water quality impacts to surface water and groundwater bodies within the Site Area;
- Water resource and water quality impacts to private and public water supplies within the vicinity of the Site Area; and
- Designated sites.

8.12.2 Accounting for embedded and additional mitigations, it has been assessed that there would be no significant effects during either the construction, operational or decommissioning stages of the Scheme.

8.13 References

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