Candwr Solar Farm

Pre Application Consultation

Environmental Statement

Chapter 9: Water Environment

2 July 2026

TotalEnergies

Table of Contents:

9. Water Environment

9.1. Introduction 2
9.2. Assessment Approach 2
9.3. Baseline Conditions 13
9.4. Assessment of Likely Significant Effects 16
9.5. Mitigation, Enhancement and Residual Effects 22
9.6. Cumulative Effects 25
9.7. Summary 25
9.8. Conclusion 27

List of Tables:

Table 9.1: Criteria for Receptor Sensitivity 8
Table 9.2: Criteria for Magnitude of Change 8
Table 9.3: Significance Matrix 9
Table 9.4: Summary of Correspondence with Statutory Consultees 10
Table 9.5: Significance of Effects 21
Table 9.6: Mitigation Measures 23
Table 9.7: Residual Significance of Effects (with Mitigation) 24
Table 9.8: Summary of Effects, Mitigation and Residual Effects 28

9. Water Environment

9.1. Introduction

9.1.1. This draft chapter prepared for Statutory Consultation identifies the potential impacts on Water Environment from the construction, operational and decommissioning phases of the Proposed Development.

9.1.2. This assessment reports on the baseline Site conditions and Proposed Development design information available at the time of writing summarised in **Chapter 3: Application Site** and **Chapter 4: Proposed Development and Alternatives**.

9.1.3. Consultation responses as part of the EIA Screening and EIA Scoping Direction (**Appendix 2.2**) have been considered during the preparation of this chapter and this is discussed in further detail below.

9.1.4. The Site is primarily located within the Local Planning Authority Areas (LAA) of Monmouthshire County Council (MCC) and Torfaen County Borough Council (TCBC). A small area of the southern extent of the Site is within the authority area of Newport City Council (NCC). The LAA boundaries in relation to the Site are shown in **Figure 9.1** at the end of this chapter.

9.1.5. This ES chapter is supported by:

- **Appendix 9.1 – Flood Consequence Assessment and Surface Water Drainage Strategy Report**

9.1.6. This ES chapter is supported by the following figure:

- **Figure 9.1 – Study Area.**

9.2. Assessment Approach

Legislative and Policy Framework

9.2.1. This assessment is based on the following legislation, policy, and guidance.

National Planning Policy

Planning Policy Wales (PPW) 2024[1]

9.2.2. PPW sets out the land use planning policies of the Welsh Government. It was first published in December 2018 (Edition 10) and last updated in February 2024 (Edition 12). PPW outlines that all new development should:

[1] Planning Policy Wales, Edition 12 (February 2024). Welsh Government. Accessed at: https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf

- Consider all flood risk at an early stage in the development.
- Reduce, and must not increase, flood risk arising from river and/or coastal flooding on and off the development Site itself.
- Not cause additional run-off, which can be achieved by controlling surface water as near to the source as possible by the use of SuDS.

9.2.3. The PPW is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.

Technical Advice Note (TAN) 15: Development, Flooding and Coastal Erosion 2025[2]

9.2.4. Technical Advice Note 15 (TAN15) reflects the core principles of the National Strategy for Flood and Coastal Erosion Risk Management in Wales, to adopt a risk-based approach in respect of new development in areas at risk of flooding and coastal erosion. TAN15 was first issued in July 2004 and last updated in March 2025. Key to the updated TAN15 (since March 2025) was the implementation of NRW's Flood Map for Planning which replaces the Development Advice Map for planning purposes.

9.2.5. TAN15 (2025) discusses how flood risk encompasses:

- The likelihood of an event happening.
- The impact that will result if flooding or coastal erosion occurs.

9.2.6. The updated TAN15 continues to take a risk-based approach, setting out which category of land use is acceptable within each flood risk zone and is based on:

- The Flood Map for Planning identifying flood zones;
- Defining development types by their vulnerability in flood events;
- Advice on permissible uses in relation to the location of development and the consequences of flooding;
- The preparation of strategic flood consequences and flood consequences assessments at the local level to refine understanding of flood risk, and;

[2] Technical Advice Note (TAN15) July 2004, updated in March 2025. Accessed at: https://www.gov.wales/technical-advice-note-tan-15-development-flooding-and-coastal-erosion

- Planning authorities incorporating local flood risk considerations into their planning policies and decisions.

Future Wales: The National Plan 2040[3]

9.2.7. Future Wales: the National Plan 2040 is a national development framework, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining, and developing a vibrant economy, achieving decarbonization and climate-resilience, developing strong ecosystems and improving the health and well-being of communities.

9.2.8. 'Policy 8 – Flooding' states:

"Flood risk management that enables and supports sustainable strategic growth and regeneration in National and Regional Growth Areas will be supported."

Water Framework Directive[4]

9.2.9. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 ('WFD Regulations 2017') consolidate, revoke and replace the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003, which transpose the European Union (EU) Water Framework Directive (WFD) into national law. The WFD is a wide-ranging piece of European legislation that establishes a new legal framework for the protection, improvement and sustainable use of surface waters, coastal waters and groundwater across Europe in order to:

- Promote sustainable water use;
- Contribute to the mitigation of floods and droughts;
- Prevent deterioration and enhance status of aquatic ecosystems, including groundwater, and;
- Reduce pollution.

9.2.10. Water management has historically been coordinated according to administrative or political boundaries. The WFD promotes a different approach based upon management by river basin – the natural geographical and hydrological unit. River basin management plans, published by the Environment Agency (EA) and the Department for Environment Food & Rural Affairs (DEFRA), include clear objectives in respect of water quality and pollution control and a detailed account of how objectives are to be met within a prescribed timeframe.

[3] Future Wales: The National Plan 2040 (August 2019, updated in March 2026). Accessed at: https://www.gov.wales/future-wales-national-plan-2040

[4] Water Framework Directive (WFD) Regulations: UK Government. (2017). The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/407/contents/made

Land Drainage Act 1991[5]

9.2.11. The Land Drainage Act is "*an act to consolidate the enactments relating to internal drainage boards, and to the functions of such boards and of local authorities in relation to land drainage, with amendments to give effect to recommendations of the Law Commission*."

9.2.12. The act requires that a watercourse be maintained by its owner in such a condition that the free flow of water is not impeded. Under the Land Drainage Act 1991, consent is required to build or alter a culvert or structure (such as a weir) to control the flow of water on any Ordinary Watercourse or where proposals will cause an obstruction to flow.

Flood and Water Management Act 2010 (Schedule 3)[6] *and the Sustainable Drainage (Approval and Adoption Procedure) (Wales) Regulations 2018*

9.2.13. The Flood and Water Management Act (FWMA) 2010 – Schedule 3 came into effect in Wales in January 2019 and requires new developments to include Sustainable Drainage Systems (SuDS) features that comply with national standards.

9.2.14. The Sustainable Drainage Regulations 2018 came into force in January 2019 and set out the requirements that new developments of more than one dwelling or where the area covered by construction work equals or exceeds 100 square metres require approval before construction can commence from the SuDS Approval Body (SAB). Adoption and management arrangements, including a funding mechanism for maintenance of SuDS infrastructure and all drainage elements are to be agreed by the SAB as part of this approval. This will ensure that SuDS infrastructure is properly maintained and functions effectively for its design life.

Local Planning Policy

Monmouthshire Stage 1 and Stage 2 Strategic Flood Consequence Assessment (SFCA) (October 2025)

9.2.15. This assessment has reviewed the information and requirements included in the Monmouthshire Stage 1 and Stage 2 Strategic Flood Consequence Assessment (SFCA) (October 2025). This will be referred to as the "SFCA (2025)" for the purposes of this report. The SFCA was commissioned to support the development of the Replacement Local Development Plan (LPD) 2018-2033. The SFCA provides a robust evidence base to inform land allocation decisions and planning policies, ensuring that future development is sustainable and resilient to flood risk.

[5] Land Drainage Act 1991: UK Government. (1991). *Land Drainage Act 1991*. Available at: https://www.legislation.gov.uk/ukpga/1991/59/contents/enacted

[6] Flood and Water Management Act 2010: UK Government. (2010). *Flood and Water Management Act 2010*. Available at: https://www.legislation.gov.uk/ukpga/2010/29/contents/enacted

South East Wales Stage 1 Strategic Flood Consequences Assessment (November 2022)

9.2.16. This assessment has also reviewed the South East Wales Stage 1 Strategic Flood Consequences Assessment (November 2022). This will be referred to as "SFCA, (2022)" for the purposes of this report. The SFRA (2022) covers eleven Local Planning Authorities (LPAs) in South East Wales, including Monmouthshire County Council, Torfaen County Borough Council and Newport City Council. The SFCA (2022) is a desk-based study which collates existing information to undertake a broad assessment of potential flood risks across the entire study area from all sources of flooding.

Guidance

The CIRIA SUDS Manual (CIRIA 753)

9.2.17. The SuDS Manual (2015) expands upon the framework set out by the Government's Non-Statutory Technical Standards for SuDS and sets out the latest industry practice and guidance regarding the planning, design, construction, management and maintenance of SuDS.

Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems (2018)

9.2.18. Outlines sustainable drainage systems standards in Wales and guidance on the principles on applying the national standards.

Welsh Transport Planning and Appraisal Guidance (WelTAG, 2008) [7]

9.2.19. There is no specific quantitative assessment methodology published for Water Environment impact assessments during construction and operational phases. However, the scale and nature of each potential effect (and therefore whether it is considered to be a significant effect) has been assessed using an approach which is broadly based on the established methodology from the Welsh Transport Planning and Appraisal Guidance (WelTAG).

Methodology

Study Area

9.2.20. The study area is defined by a 2km radius from the Site, as shown in **Figure 9.1**. This extent is considered a conservative assessment to capture baseline conditions and identify receptors that may be subject to significant effects. The assessment of effects encompasses Main Rivers and Ordinary Watercourses, surface water drainage and water quality.

[7] The Welsh Assembly Government (June 2008). Welsh Transport Planning and Appraisal Guidance.

Desk Study

9.2.21. This assessment has been written in conjunction with the **FCA and SWDS** (**Appendix 9.1**) and undertaken in accordance with PPW and TAN15 on EIA and has involved a review of the following sources of baseline data:

- Review of NRW's Flood Map for Planning and other available records including the NRW's Flood Map for Planning for Sea and NRW's Flood Map for Planning for Surface Water and Small Watercourses.
- Review of WFD data records on water quality catchment data (surface water and groundwater) and NRW Source Protection Zones (SPZs);
- Review of the Monmouthshire Stage 1 and Stage 2 Strategic Flood Consequence Assessment (SFCA, 2025) and South East Wales Stage 1 Strategic Flood Consequences Assessment (SFCA, 2022).

Surveys

9.2.22. A Site visit was conducted in January 2026 in order to confirm the presence of the identified watercourses and to report on their suitability of providing a discharge location.

9.2.23. Infiltration testing was completed across the Site in January 2026. In total 24 No. trial pits were conducted across the Site. The locations of the pits were planned in collaboration with the SABs comments and were a combination of both deep (1.50m) and shallow (0.50m) pits excavated at each location. In summary, the vast majority of the soakaway tests undertaken demonstrated insufficient fall in water level in order to calculate an infiltration rate. Only 1 trial pit (TP12D.02) showed sufficient fall. As such, infiltration as the primary means of surface water disposal is considered to be unfeasible. Some limited and localised infiltration could be possible at the single trial pit area where testing was successful.

Cumulative Effects Assessment Modelling

9.2.24. There are no legislative or policy requirements which set out how a cumulative effects assessment should be undertaken.

9.2.25. There are three schemes which may be of relevance illustrated **on Figure 2.1 Cumulative Sites Plan** within a 10km radius of the Site**.** It is considered that all the identified cumulative schemes will be designed to appropriately manage the Water Environment, including drainage as standalone Sites during both construction and operation

Assessment of Significance

9.2.26. To define the significance of effects of the Proposed Developments on the Water Environment, both the sensitivity of the receptor and the magnitude of change have been assessed.

Criteria for Receptor Sensitivity

9.2.27. The proposed sensitivity definitions for the assessment of receptors are detailed in **Table 9.1** below.

Table 9.1: Criteria for Receptor Sensitivity

Receptor Sensitivity	Receptor Type	Sensitivity Definition
High	Surface Water Drainage	Critical Drainage Area
	Surface Water (Quality)/Hydrology	Water Framework Directive (WFD) Classification objective of High or Good
	Groundwater (Quality)	Principal Aquifer or Source Protection Zone (SPZ) 1
Medium	Surface Water Drainage	Medium to High surface water flood risk
	Surface Water (Quality)/Hydrology	WFD Classification objective of Moderate
	Groundwater (Quality)	Secondary A or B Aquifer or SPZ2/3
Low	Surface Water Drainage	Low or no surface water flood risk
	Surface Water (Quality)/Hydrology	WFD Classification objective of Poor or Bad
	Groundwater (Quality)	Unproductive Strata

Criteria for Magnitude of Change

9.2.28. The magnitude of change of impact on a receptor is detailed in **Table 9.2** below. The magnitude of change is independent of its sensitivity and will be determined by professional judgement with supporting evidence including reference to the WelTAG, 2008 methodology.

Table 9.2: Criteria for Magnitude of Change

Magnitude of Change	Description of Criteria
High	Total loss or major/substantial alteration to key elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed. An acute or chronic adverse effect on human health, but not likely to be defined as 'significant harm'.
Low	A minor shift away from baseline conditions. Change arising from the loss / alteration will be discernible/detectable. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation. A preventable, non-permanent adverse effect on human health.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a 'no change' situation. No adverse effect on human health or the environment.

9.2.29. The significance of effects is determined by considering the sensitivity of the receptor (**Table 9.1**) and the magnitude of change (**Table 9.2**). The effect is defined in accordance with the matrix presented in **Table 9.3**.

Table 9.3: Significance Matrix

Magnitude of Change	Sensitivity of Receptor			
	High	**Medium**	**Low**	**Negligible**
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor to Moderate	Negligible
Low	Moderate	Minor to Moderate	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

9.2.30. Based on **Table 9.3**, the effects of the Proposed Development on the Water Environment will be defined as either major, moderate, minor or negligible. Only major and moderate only effects are considered to be significant in terms of the EIA regulations (highlighted in orange in **Table 9.3**).

9.2.31. The nature of the effect is then defined as either beneficial or adverse. Effects that are considered to be adverse are those that have a detrimental effect on existing baseline conditions. Impacts that are considered to be beneficial are those that result in an improvement in baseline conditions. This is determined from referring to **Tables 9.1, 9.2 and 9.3** above.

9.2.32. It is important to consider the geographic extent of the effect, and this is defined as being one of the following:

- Local: which are those affecting the Site and neighboring receptors (within 2km radius);
- District: which are those affecting receptors within the local authority areas (i.e. Monmouthshire County Council, Torfaen County Borough Council and Newport City Council);
- Regional: which are those affecting the region of South Wales; or
- National: which are those that could affect different parts of the country.

9.2.33. The duration of each effect is considered as either being 'temporary', i.e. the effects last the duration of the construction phase and then would no longer be significant or 'permanent', i.e. the effect would last for the duration of the operational lifetime of the development or longer.

9.2.34. Each effect considered is defined as being either 'short-term', 'medium-term' or 'long-term' these being one of the following:

- Short-term: typically being from a few months up to three years in duration;
- Medium-term: this would cover a duration of around one to ten years; and
- Long-term: this would cover a duration in excess of ten years.

Consultation

9.2.35. An EIA Screening Direction request was sent to Welsh Ministers, managed by Planning Inspectorate Wales on behalf of the Welsh Government (PEDW) on 7th April 2025. A Screening Direction was issued on 12th June 2025 concluding the Proposed Development is an EIA development.

9.2.36. An **EIA Scoping Report** (**Appendix 2.1**) was issued to PEDW on 29th September 2025 which proposed to scope out 'Water Environment'. An **EIA Scoping Direction** (**Appendix 2.2**) was issued on 11th February 2026 which confirmed that some effects associated with 'Water Environment' should be scoped in such as effects on surface water drainage patterns and effects on water quality. The EIA Scoping Direction confirmed that given the majority of the Site is within Flood Zone 1 and no built development is proposed in Flood Zone 2 or 3, a Flood Consequence Assessment outside of the EIA process to be appropriate, therefore fluvial flooding can be scoped out of the ES.

9.2.37. Accordingly, **Table 9.4** below describes the consultation that has been undertaken with respect to the assessment of the Proposed Development's likely significant effects on the Water Environment.

Table 9.4: Summary of Correspondence with Statutory Consultees

Consultee	Summary of Comments	Applicants Response
NRW	Given that the majority of the Site is within Flood Zone 1 and no built development is proposed in Flood Zone 2 or 3, NRW considerers a Flood Consequences Assessment outside of the EIA process to be appropriate, therefore fluvial flooding can be scoped out of the ES. NRW's advice in the response in Appendix 1 regarding high voltage fluid filled cables have the potential to result in contamination/pollution of groundwater. NRW refer to the information that should be included with a planning application and guidance/resources.	A Flood Consequence Assessment is appended to the ES (**Appendix 9.1**). The Applicant can confirm that proposed cables used will not be fluid-filled, only dry XLPE cables have been specified, with cable joints also being dry. This type of cable provides total environmental immunity and zero impact to the local environment and location of installation. As such, the cables will not have the potential to contaminate groundwater.

MCC	MCC agree with the NRW and advise that this is acceptable mitigation from a flood risk perspective. MCC add that any SuDS attenuation or infiltrating features should not be built within flood zones unless the individual features are designed to receive the additional flow from the catchment.	A Flood Consequence Assessment is appended to the ES (**Appendix 9.1**). As shown in Appendix 9.1 of the ES, SuDS within the proposed surface water drainage strategy are not proposed within flood zones.
TCBC	TCBC advise that the following assessments should be scoped into the ES and should inform and consider how during construction and operation surface after would not affect the water quality that leads to the River Usk and Severn: • Water Feature Survey • Water Management Plan • Pollution Prevention Measures • Restoration	Discussions are ongoing with TCBC regarding water feature surveys and water management plans.
Monmouthshire SAB	The applicant will need to undertake infiltration testing across the Site or provide a suitably robust ground investigation that demonstrates the ground model and the unsuitability for infiltration. If infiltration can be sufficiently demonstrated to not be usable then the applicant will need to discharge to the watercourses across the Site at reduced rates. The tracks/buildings and infrastructure elements of the Site would be treated as 100% impermeable areas for the purpose of calculating the post development runoff. The solar panel array areas will be subject to a 20% urbanisation factor.	An outline drainage strategy addresses these points and is appended to the ES (**Appendix 9.1**).

	The system will need to be designed to manage a 100 year + 30% climate change event.	
TCBC SAB	Ground investigations and testing should be undertaken to demonstrate the ground conditions across the Site to provide an in-depth ground model. If infiltration can be sufficiently demonstrated to not be usable then the applicant will need to discharge to the watercourses across the Sites at reduced rates During the pre-application meeting, it was agreed that the tracks/buildings and infrastructure elements of the Site would be treated as 100% impermeable areas for the purpose of calculating the post development runoff. The solar panel array areas will be subject to a 20% urbanisation factor. The system must be designed to take a 1 in 100 year storm plus 30% for climate change without flooding	An outline drainage strategy addresses these points and is appended to the ES (**Appendix 9.1**).

Scoping Criteria

Technical Scope

9.2.38. The technical guidance of the PPW, TAN15 and Natural Recourse Wales (NRW) requires an assessment of all potential sources of flood risk with respect to the Proposed Development. This assessment has been carried out within the **Flood Consequence Assessment (FCA) and Surface Water Drainage Strategy (SWDS)** report included as **Appendix 9.1**. The FCA assesses the risk of flooding from the following sources:

- Rivers (Fluvial);
- Sea (Tidal);
- Surface Water and Small Watercourses;
- Groundwater;
- Sewers; and

- Artificial Sources (Reservoirs and Canals).

9.2.39. This chapter considers four primary potential impacts on the Water Environment resulting from the Proposed Developments including:

- Effects on Main Rivers and Ordinary Watercourses;
- Effects on Surface Water Drainage Patterns;
- Effects on Water Quality (Surface Water & Fluvial); and
- Effects on Water Quality (Groundwater).

9.2.40. As stated above, the **EIA Scoping Direction** (**Appendix 2.2**) confirmed that given the majority of the Site is within Flood Zone 1 and no built development is proposed in Flood Zone 2 or 3, a Flood Consequence Assessment has been completed outside of the EIA process and assesses all flood risk sources at the Site and is considered to be appropriate, and therefore flood risk can be scoped out of the ES and is not considered likely to be significant and are therefore not included within the scope of the assessment.

9.2.41. A full assessment of flood risk is provided in the **FCA** (**Appendix 9.1**) and therefore is scoped out of the EIA.

Limitations to the Assessment

9.2.42. This Chapter is limited to the effects from rain falling on the Site as well as increase in sea levels and its management in flow and quality in relation to the receiving Main Rivers. It does not consider the ecology of the habitats, which is covered in **Chapter 6 - Ecology** of this ES.

9.2.43. By its nature, rainfall, past conditions and characteristics vary, as well as conditions related to normal rainfall standards; exceedance events could potentially cause nuisance, which are beyond the scope of this assessment.

9.2.44. The FCA and ES chapter are reliant on publicly available data and additional data provided by consultees; it is assumed that this information is correct and complete.

9.3. Baseline Conditions

Site Description and Context

9.3.1. The Site is located on Land at Court Farm, Ponthir, Monmouthshire. The Site is 131.62 hectares (ha) in area. Given the extent of the Site, the boundary has been divided into 16 distinctive parcels, including the land for the substation (plan provided in **Appendix 9.1**).

9.3.2. The Site predominantly comprises of land that is used for agricultural purposes, including both arable and pasture. Ponthir is located immediately south-west of the Site, Caerleon is located approximately 1km south of the Site, and Cwmbran

approximately 1km west. Immediately Southwest of field Parcel 8A and east of Parcel 12A lies Ponthir Wastewater Treatment Works. Court Farm Waterworks and Ponthir Reservoir (Court Farm Reservoir) are nestled between Parcels 1C, 1F, 8B and 8C.

9.3.3. A topographical survey of the Site was completed in June 2025 by Anthony Brookes Surveys Ltd. The Topographical Survey indicates that the highest level of the Site is within the northern extent at 89 meters above Ordnance Datum (mAOD). The lowest level on the Site is located within the far southern extent at 11 mAOD.

Hydrology

9.3.4. There are no Main Rivers[8] located within the Site according to NRW[9]. The closest Main River, known as 'Afon Lwyd', is located approximately 25m south of the southernmost boundary of the Site. A second Main River known as 'Sor Brook' is located approximately 500m east of the eastern boundary of the Site.

9.3.5. There are several Ordinary Watercourses[10] located within the Site as defined by the Topographical Survey and Light and Ranging Detecting data (LiDAR).

9.3.6. The Site is not located within an Internal Drainage District (IDD). IDDs are specific low-lying areas requiring special water level management.

Hydrogeology and Groundwater Quality

9.3.7. Geological data from the British Geological Survey (BGS) shows the majority of the Site is underlain by the "Moor Cliffs Formation – Interbedded mudstone and sandstone" bedrock geology. Some of the far northern and western extents of the Site including parts of Parcel's 6A and 7A as well as Parcel 14A are partially underlain by either the "Downton Castle Sandstone Formation – Sandstone" and parts of Parcel's 7A and 7B are partially underlain by the or the "Upper Llanbadoc Beds and Llangibby Beds (Undifferentiated) – Calcareous mudstone" bedrock geology.

9.3.8. BGS data indicates that the majority of the Site is not underlain by any superficial deposits. There is a band of "Alluvium – clay, silt, sand and gravel" superficial deposits through the Site associated with an Ordinary Watercourse impacting Parcels 7B, 6A, 6C, 9A, 9B, 12A, 12B and 13H. Parcel 13D, 14A, 14 B and 14C are underlain by "Glaciofluvial deposits, Devensian – Sand and gravel" superficial deposits.

9.3.9. The bedrock geology of the Moor Cliffs Formation, and Downton Castle Sandstone Formation are classified by BGS as a 'Secondary A Aquifer', these are defined as "*permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers*." The bedrock geology of the Upper Llanbadoc Beds and Llangibby Beds is classified by BGS as a 'Secondary B

[8] Main River is defined by the EA as any watercourse that contributes significantly to the hydrology of a catchment.
[9] https://datamap.gov.wales/maps
[10] Ordinary Watercourses include all other water channels not classified as Main Rivers. This broad category encompasses smaller streams, brooks, ditches, drains, culverts, and dykes.

Aquifer', this is defined as "*lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers*".

9.3.10. The hydrogeology 625K digital hydrogeological map of the UK highlights that the entire Site is underlain by a "low productivity aquifer".

9.3.11. Soilscapes mapping[11] shows that the majority of the Site comprises of 'freely draining slightly acid loamy soils' and a small extent of 'freely draining floodplain soils' within the south-western extent of the Site.

9.3.12. Infiltration testing was completed across the Site in January 2026. In total 24 No. trial pits were conducted across the Site. In summary, the vast majority of the tests demonstrated insufficient fall in water level in order to calculate an infiltration rate.

9.3.13. The Site and surrounding study area (2km) is not located within a Source Protection Zone[12].

9.3.14. The majority of the Site is located within the SE Valleys Eastern Devonian Old Red Sandstone WFD Groundwater Body which had an overall WFD status of 'good', under Cycle 3 Classification (2021 data). A small portion of the eastern portion of the Site is located within the Usk Devonian Old Red Sandstone WFD Groundwater Body which also has an overall WFD status of 'good', under Cycle 3 Classification (2021 data).

9.3.15. Based on the majority of bedrock geology comprising of a Secondary A Aquifer, the receptor of Groundwater (Quality) is therefore considered to have a **Medium** Sensitivity.

Surface Water Quality

9.3.16. The Site is located within the Usk Water Framework Directive (WFD) Catchment and drains into two separate WFD waterbodies. The western extent of the Site drains into the WFD River Waterbody 'Afon Lwyd' and has an overall water status of 'Moderate', under Cycle 3 Classification (2021 data). The eastern extent of the Site drains into the WFD River Waterbody 'Sor Brook' which has an overall water status of 'Moderate', under Cycle 3 Classification (2021 data).

9.3.17. Based on this, the receptor of Surface Water (Quality)/Hydrology is considered to have a **Medium** Sensitivity.

Surface Water Drainage

9.3.18. NRW's Flood Map for Planning for Surface Water and Small Watercourses shows that the majority of the Site is in Flood Zone 1. There are some Flood Zone 2 and 3 flow paths

[11] https://www.landis.org.uk/soilscapes/ (accessed 12/03/2026).
[12] Source Protection Zones (SPZs) are defined around large and public potable groundwater abstraction sites.

located within the Site, however these are generally associated with the existing Ordinary Watercourses on Site.

9.3.19. Based on the extents of Flood Zone 2 and 3 of Surface Water and Small Watercourse flooding within the Site, the receptor of Surface Water Drainage is therefore considered to have **Medium** Sensitivity.

Future Baseline

9.3.20. The future baseline without the proposed development would remain as stated above.

9.4. Assessment of Likely Significant Effects

9.4.1. The assessment of likely significant effects has been undertaken on the basis that certain mitigation measures form an inherent part of the Proposed Development ("embedded mitigation"). Where relevant, these design measures are referenced in the assessment sections that follow. Further detail on both embedded and additional mitigation measures is provided in **Section 9.5** of this chapter.

Effects during Construction

Effects on Main Rivers and Ordinary Watercourses

9.4.2. The Site will involve construction of temporary access tracks and Ordinary Watercourse crossings. Access roads will be constructed with compacted self-binding aggregate fill materials. Access roads would form long linear features that, in the event of rainfall, could become temporary drainage routes for surface water. The crossings will be designed to ensure they do not impact existing flows at detailed design during the design flood event (1 in 100 year river flood plus an allowance for climate change. Typical design details of the watercourse crossings are also provided in **Appendix 9.1**. With the potential for soil erosion and movement of sediment from shallow road excavations, it would be necessary to ensure that pollution prevention measures within the Site are appropriate to prevent migration of silt and/or other pollutants from equipment storage areas to watercourses during construction.

9.4.3. The WFD surface water classification of the two waterbodies to which the site drains into have overall statuses of 'moderate' and therefore the Main River and Ordinary Watercourse sensitivity to silt contamination is considered to be **Medium**.

9.4.4. Without mitigation, potential effects are considered of a **Low** magnitude. The significance of the effect is **Minor to Moderate Adverse** on a temporary short-term basis and therefore considered **not significant**.

9.4.5. Mitigation measures by design during the construction phase will include the implementation of a minimum 7m Ordinary Watercourse easement, with the exception of Ordinary Watercourse crossings. This easement has been advised by Monmouthshire County Council. In addition, as stated in **Chapter 6 – Ecology,** 10m easements will be implemented.

9.4.6. Additional mitigation measures will include a Construction Surface Water Management Plan (CSWMP) and Construction Environmental Management Plan (CEMP) will be secured through planning conditions and will assess the impact of the Proposed Development on Main Rivers and Ordinary Watercourses in full. The residual effect is further detailed and assessed in **Section 9.5** below.

Effects on Surface Water Drainage Patterns

9.4.7. Construction of the Proposed Development, left unmanaged, could impact the existing surface water drainage patterns on Site, particularly given some Flood Zone 2 and 3 surface water flow paths on Site.

9.4.8. Due to existing areas of Flood Zone 2 and 3 areas of surface water and small watercourse flow paths on Site, the sensitivity of the Site to effects on surface water drainage patterns is considered to be **Medium**. The effect of the Proposed Development on surface water drainage patterns is considered to be of **Low** magnitude. The effects would be temporary and short term.

9.4.9. Based on the above, the significance of the effect is considered to be **Minor to Moderate Adverse** and considered **not significant**.

9.4.10. Additional mitigation measures including a CSWMP and CEMP will be secured through planning conditions and will assess the impact of the Proposed Development on surface water drainage patterns in full. The residual effect is further detailed and assessed in **Section 9.5** below.

Effects on Water Quality (Surface Water & Fluvial)

9.4.11. During construction, fuel, hydraulic fluids, solvents, grouts, paints and detergents and other potentially polluting substances will be stored and / or used on the Site. Leaks and spillages could pollute watercourses. To allow such substances to enter a watercourse could be in breach of regulation 38(1) of the Environmental Permitting (England and Wales) Regulations 2016, therefore, measures to control the storage, handling and disposal of such substances will need to be in place prior to and during construction.

9.4.12. In addition, any chemicals storage should be fitted with secondary containment and located, as far as practical, more than 50 m from a watercourse / waterbody.

9.4.13. The WFD surface water classification of the two waterbodies to which the Site drains into have overall statuses of 'moderate' and therefore the sensitivity to spillages, leakages and pollutants is considered to be **Medium**.

9.4.14. Based on the above, spillages of stored chemicals/fuel could cause short term, temporary effects of a **Low** magnitude on the local watercourses and surface water. The significance of effect is **Minor to Moderate Adverse** on a temporary short-term basis and therefore considered **not significant**.

9.4.15. A CSWMP and CEMP will be secured through planning condition and assess the impact of the Proposed Development on fluvial and surface water quality in full. This would significantly reduce the likelihood of pollutants, including suspended solids, being discharged to nearby watercourses. The residual effect is further detailed and assessed in **Section 9.5** below.

Effects on Water Quality (Groundwater)

9.4.16. During construction, fuel, hydraulic fluids, solvents, grouts, paints and detergents and other potentially polluting substances will be stored and / or used on the Site. Leaks and spillages could pollute groundwater bodies through infiltration. To allow such substances to enter a watercourse could be in breach of regulation 38(1) of the Environmental Permitting (England and Wales) Regulations 2016, therefore, measures to control the storage, handling and disposal of such substances will need to be in place prior to and during construction.

9.4.17. It is noted that infiltration testing completed across the Site in January 2026 demonstrated limited infiltration capacity. The Site is spread between two WFD Groundwater Bodies which both have an overall WFD status of 'good', under Cycle 3 Classification (2021 data). In addition, the majority of bedrock geology on Site comprises of a Secondary A Aquifer and comprises of 'freely draining' soils and therefore the sensitivity of groundwater to spillages, leakages and pollutants is considered to be **Medium**.

9.4.18. Without mitigation measures spillages of chemicals/fuel stored could cause short term, temporary effects of a **Low** magnitude on groundwater. The significance of effect is **Minor to Moderate Adverse** on a temporary short-term basis and therefore considered **not significant**.

9.4.19. A CSWMP and CEMP will be secured through planning conditions and will assess the impact of the Proposed Development on groundwater quality in full which would significantly reduce the likelihood of pollutants, including suspended solids, being discharged to groundwater. The residual effect is further detailed and assessed in **Section 9.5** below.

Effects during Operation

Effects on Main Rivers and Ordinary Watercourses

9.4.20. During operation of the Site, impacts on Main Rivers and Ordinary Watercourses may be associated with Ordinary Watercourse crossings and the silting up of watercourses if surface water runoff is not properly managed. Impacts may arise from development in close proximity to the existing Ordinary Watercourses, resulting in alteration or damage to riparian areas. The crossings will be designed to ensure they do not impact existing flows at detailed design during the design flood event (1 in 100 year river flood plus an allowance for climate change, further details are provided in **Appendix 9.1**.

9.4.21. The WFD surface water classification of the two waterbodies to which the Site drains into have overall statuses of 'moderate' and therefore the Main River and Ordinary Watercourse sensitivity to silt contamination is considered to be **Medium**.

9.4.22. Without mitigation, potential effects of the Proposed Development on Main Rivers are considered to be **Low** in magnitude. Based on this, the significance of the effect is considered to be **Minor to Moderate Adverse** on a permanent basis and is considered **not significant**.

9.4.23. Mitigation measures by design during the operational phase will include the implementation of 7m Ordinary Watercourse easements, with the exception of Ordinary Watercourses. In addition, as stated in **Chapter 6 – Ecology**, 10m easements will be implemented.

Effects on Surface Water Drainage Patterns

9.4.24. Operation of the Proposed Development, if left unmanaged, could impact the existing surface water drainage patterns, particularly given some Flood Zone 2 and 3 surface water flow paths on Site.

9.4.25. Consultation with the SAB has been undertaken and SAB advice has been implemented into the drainage strategy design as shown in **Appendix 9.1**.

9.4.26. Intentionally through design, the layout ensures that no greater vulnerability infrastructure such as the substation, inverters, transformers or distribution panels are located within areas at risk of Flooding from Surface Water and Small Watercourses. In addition, the layout ensures that the majority of panels are also excluded from areas at risk of Flooding from Surface Water and Small Watercourses. Moreover, the lowest edge of solar panels proposed on Site will be raised 0.8m above the ground which will ensure existing surface water flow patterns will be maintained.

9.4.27. The sensitivity of the Site to effects on surface water drainage patterns is considered to be **Medium**. The effect of the Proposed Development on surface water drainage patterns is considered to be of **Low** magnitude. Based on this, the significance of the effect is considered to be **Minor to Moderate Adverse** on a permanent basis and considered **not significant**.

9.4.28. Mitigation measures by design to protect the surface water drainage patterns within the Site are proposed and discussed in **Section 9.5** below including implementing a surface water drainage strategy (included in **Appendix 9.1**), which has been designed to manage surface water runoff from the Site.

Effects on Water Quality (Surface Water & Fluvial)

9.4.29. Spillages of pollutants (e.g. oil) on access tracks from maintenance vehicles can be transported to watercourses via runoff.

9.4.30. The receptors at risk are surface watercourses (WFD waterbodies) which both have a classification of 'moderate' and therefore are considered to be of **Medium** sensitivity to operational pollutants.

9.4.31. Without mitigation, the increase in highway spillage risk is considered to have an effect of a **Low** magnitude. The significance of effect is **Minor to Moderate Adverse** and not considered significant.

9.4.32. Mitigation measures by design include the implementation of the surface water drainage strategy (included in **Appendix 9.1**) which has been designed to ensure appropriate water quality treatment is included in the drainage design and to ensure any potential effects are considered **not significant**.

Effects on Water Quality (Groundwater)

9.4.33. Spillages of pollutants (e.g. oil) on access tracks from maintenance vehicles to groundwater bodies via infiltration is possible.

9.4.34. The receptor at risk is groundwater and is considered to be of **Medium** sensitivity to operational pollutants.

9.4.35. Based on the above, the increase in highway spillage risk is considered to have an effect of a **Low** magnitude. The significance of effect is **Minor to Moderate Adverse** and is considered **not significant**.

9.4.36. Mitigation by design includes the implementation of the surface water drainage strategy (included in **Appendix 9.1**) which has been designed to ensure appropriate water quality treatment is included in the drainage design and to ensure any potential effects are not significant.

Effects during Decommissioning

9.4.37. Following cessation of energy generation and exportation of the Proposed Development, the Site would be restored back to full agricultural use with all equipment and below ground connections removed. The exception is the proposed onsite 132kv substation (and ancillary security measures around the substation compound e.g., perimeter fencing, lighting and CCTV equipment) and associated access to the Substation will be retained on a permanent basis as this would remain as part of the essential National Grid distribution network infrastructure. Depending on the depth of the cabling, some may be capped off from the local electricity network and left in-situ rather than removed via trenching. It is anticipated that decommissioning of the Proposed Development would be controlled by planning condition.

9.4.38. The effects associated with the decommissioning phase are anticipated to be comparable or less than that associated with the construction phase. Therefore, the magnitude of impact on all receptors is likely to be no more than short term and Adverse at the local scale and therefore not significant.

9.4.39. Additional mitigation measures will include a Decommissioning Environmental Management Plan (DEMP) which will be secured through planning conditions and will assess the impact of the decommissioning of the Proposed Development in full.

9.4.40. Therefore, effects during decommissioning have been scoped out of assessment.

Summary of Significance of Effects

Table 9.5: Significance of Effects

Environmental Effect	Sensitivity of Receptor	Impact Magnitude	Nature of Impact (Permanent/ Temporary)	Effect and Significance
CONSTRUCTION				
Main Rivers and Ordinary Watercourses	Medium	Low	Temporary	**Minor to Moderate Adverse (Not Significant)**
Surface Water Drainage Patterns	Medium	Low	Temporary	**Minor to Moderate Adverse (Not Significant)**
Water Quality (Surface Water & Fluvial)	Medium	Low	Temporary	**Minor to Moderate Adverse (Not Significant)**
Water Quality (Groundwater)	Medium	Low	Temporary	**Minor to Moderate Adverse (Not Significant)**
OPERATION				
Main Rivers and Ordinary Watercourses	Medium	Low	Permanent	**Minor to Moderate Adverse (Not Significant)**
Surface Water Drainage Patterns	Medium	Low	Permanent	**Minor to Moderate Adverse (Not Significant)**
Water Quality (Surface Water & Fluvial)	Medium	Low	Permanent	**Minor to Moderate Adverse (Not Significant)**
Water Quality (Groundwater)	Medium	Low	Permanent	**Minor to Moderate Adverse (Not Significant)**
DECOMMISSIONING				
The effects associated with the decommissioning phase are anticipated to be comparable or less than that associated with the construction phase. Therefore, the magnitude of impact on all receptors is likely to be no more than short term and Adverse at the local scale and therefore not significant. Therefore, effects during decommissioning have been scoped out of assessment.				

9.5. Mitigation, Enhancement and Residual Effects

Mitigation by Design

9.5.1. As discussed above, there are several possible adverse effects that may occur during the construction and operation phases of the Proposed Development prior to additional mitigation. These effects could impact Main Rivers and Ordinary Watercourses, surface water drainage and water quality on Site and elsewhere. In order to mitigate these potential effects, embedded mitigation measures are proposed on Site as part of the site design. A summary of the proposed mitigation measures is provided below, with further details provided in the Flood Consequence Assessment and surface water drainage strategy report appended to this ES chapter (see **Appendix 9.1**).

9.5.2. Consultation with the SAB has been undertaken and SAB advice has been implemented into the drainage strategy design.

9.5.3. Intentionally through design, the layout ensures that no greater vulnerability infrastructure such as the substation, inverters, transformers or distribution panels are located within areas at risk of Flooding from Surface Water and Small Watercourses. In addition, the layout ensures that the majority of panels are also excluded from areas at risk of Flooding from Surface Water and Small Watercourses. Moreover, the lowest edge of solar panels proposed on Site will be raised 0.8m above the ground which will ensure existing surface water flow patterns will be maintained.

9.5.4. Ordinary Watercourses on Site are expected to include a 7m easement that is left undeveloped, during the operational and construction phase. The watercourse easement will allow access for maintenance and management of the watercourses, reduce flood risk as well as reduce potential impacts on water quality as a result of the development. In addition, as stated in **Chapter 6 – Ecology**, 10m easements will be implemented.

9.5.5. Watercourse crossings will be designed to ensure they do not impact existing flows at detailed design during the design flood event.

9.5.6. A surface water drainage strategy (**Appendix 9.1**) has been prepared to manage surface water runoff from the Site and ensure surface water runoff rates from the Site do not increase and any possible impacts on surface water flood risk are mitigated. It also will ensure appropriate water quality treatment is undertaken on Site.

9.5.7. A summary of the mitigation measures are provided in **Table 9.6** below.

Additional Mitigation

9.5.8. Where necessary a temporary drainage network will be installed prior to the commencement of construction and a maintenance plan, confirmed through a CEMP and CSWMP, should be maintained throughout the duration of construction works on Site. The drainage systems will be designed to good practice standards detailed within the CIRIA SuDS manual C753.

9.5.9. A temporary construction drainage system will be developed to prevent silt-laden runoff from entering surface water drains and watercourses without treatment (e.g. earth bunds, silt fences, straw bales, or proprietary treatment) under any circumstances.

9.5.10. Construction SuDS (such as temporary attenuation) may also be used during construction if necessary and to be confirmed within a Construction Surface Water Management Plan (CSWMP).

9.5.11. Additional mitigation measures will include a Decommissioning Environmental Management Plan (DEMP) which will be secured through planning conditions and will assess the impact of the decommissioning of the Proposed Development in full.

9.5.12. A summary of the mitigation measures are provided in **Table 9.6** below.

Table 9.6: Mitigation Measures

Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measure would be secured		
	By Design	By S.106	By Condition
Consultation with the SAB has been undertaken and SAB advice has been implemented into the drainage strategy design.	X		
The layout ensures that no greater vulnerability infrastructure such as the substation, inverters, transformers or distribution panels are located within areas at risk of Flooding from Surface Water and Small Watercourses.	X		
Provision of 7m Ordinary Watercourse easement on Site that is free of Proposed Development.	X		
Implementation of a Drainage Strategy and outline of future maintenance of any proposed SuDS on Site.		X	X
Temporary drainage network and construction SuDS and will include silt management and control measures in the CEMP.			X
Use of SuDS features to provide water quality treatment and use of permeable surfacing and infiltration (if applicable) should be designed to good practice standards.	X		

A DEMP will be secured through planning conditions and will assess the impact of the decommissioning of the Proposed Development in full.			X

Enhancements

9.5.13. Biodiversity and visual amenity would also be enhanced with the proposed SuDS.

Residual Effects

9.5.14. With the embedded and additional design measures described above and those within the CEMP, all identified potential effects have been assessed as being of **Negligible** significance overall, and therefore not significant in terms of the EIA Regulations.

9.5.15. No further mitigation measures are considered necessary.

9.5.16. A summary of the residual effects are provided in **Table 9.7** below.

Table 9.7: Residual Significance of Effects (with Mitigation)

Environmental Effect	Sensitivity of Receptor	Impact Magnitude	Nature of Impact (Permanent/ Temporary)	Residual Effect and Significance
CONSTRUCTION				
Main Rivers and Ordinary Watercourses	Medium	Negligible	Temporary	**Negligible (Not Significant)**
Surface Water Drainage Patterns	Medium	Negligible	Temporary	**Negligible (Not Significant)**
Water Quality (Surface Water & Fluvial)	Medium	Negligible	Temporary	**Negligible (Not Significant)**
Water Quality (Groundwater)	Medium	Negligible	Temporary	**Negligible (Not Significant)**
OPERATION				
Main Rivers and Ordinary Watercourses	Medium	Negligible	Permanent	**Negligible (Not Significant)**
Surface Water Drainage Patterns	Medium	Negligible	Permanent	**Negligible (Not Significant)**
Water Quality (Surface Water & Fluvial)	Medium	Negligible	Permanent	**Negligible (Not Significant)**
Water Quality (Groundwater)	Medium	Negligible	Permanent	**Negligible (Not Significant)**
DECOMMISSIONING				

The effects associated with the decommissioning phase are anticipated to be comparable or less than that associated with the construction phase. Therefore, the magnitude of impact on all receptors is likely to be no more than short term and Adverse at the local scale and therefore not significant (Negligible). Therefore, effects during decommissioning have been scoped out of assessment.

9.6. Cumulative Effects

Cumulative Effects

9.6.1. This chapter has considered the potential for cumulative effects with other projects identified in **Chapter 4 – Proposed Development and Alternatives** of the ES and shown in **Figure 2.1**.

9.6.2. It is considered that all the identified cumulative schemes will be designed to appropriately manage the Water Environment, including drainage as standalone Sites during both construction and operation. They will each be required to satisfy the requirements for the control of surface water runoff. They must not increase the local risk of flooding or have a significant effect on the water environment. As such, it is not considered necessary to assess in detail any cumulative effects as these are not expected to be significant.

In-Combination Effects

9.6.3. In-combination effects related to water environment effects and the effects of other environmental disciplines for the Proposed Development are not expected to be greater than that provided for each individual environmental discipline considered in isolation. Where the highest and most direct effects from other topics are predicted, the overall magnitude of in-combination effects would not be expected to increase as a result of concurrent water environment effects.

9.7. Summary

9.7.1. The below section provides a summary of the items discussed within this Water Environment ES chapter.

Introduction

9.7.2. Consultation responses as part of the EIA Screening and EIA Scoping Direction (**Appendix 2.2**) have been considered during the preparation of this chapter and this is discussed in further detail below.

9.7.3. The Site is primarily located within the Local Planning Authority Areas (LAA) of Monmouthshire County Council (MCC) and Torfaen County Borough Council (TCBC). A small area of the southern extent of the Site is within the authority area of Newport City Council (NCC).

Baseline Conditions

9.7.4. The Site is located on Land at Court Farm, Ponthir, Monmouthshire. The Site is 131.62 hectares (ha) in area. Given the extent of the Site, the boundary has been divided into 16 distinctive parcels, including the land for the substation (plan provided in **Appendix 9.1**).

9.7.5. There are no Main Rivers located within the Site according to NRW. There are several Ordinary Watercourses located within the Site as defined by the Topographical Survey and Light and Ranging Detecting data (LiDAR).

9.7.6. The hydrogeology 625K digital hydrogeological map of the UK highlights that the entire Site is underlain by a "low productivity aquifer".

9.7.7. Soilscapes mapping shows that the majority of the Site comprises of 'freely draining slightly acid loamy soils' and a small extent of 'freely draining floodplain soils' within the south-western extent of the Site.

9.7.8. The Site is located within the Usk Water Framework Directive (WFD) Catchment and drains into two separate WFD waterbodies. The western extent of the Site drains into the WFD River Waterbody 'Afon Lwyd' and has an overall water status of 'Moderate', under Cycle 3 Classification (2021 data). The eastern extent of the Site drains into the WFD River Waterbody 'Sor Brook' which has an overall water status of 'Moderate', under Cycle 3 Classification (2021 data).

9.7.9. NRW's Flood Map for Planning for Surface Water and Small Watercourses shows that the majority of the Site is in Flood Zone 1. There are some Flood Zone 2 and 3 flow paths located within the Site, however these are generally associated with the existing Ordinary Watercourses on Site.

Likely Significant Effects

9.7.10. Following the implementation of mitigation measures by design and the additional mitigation measures set out in this ES chapter, it is considered that there are no significant adverse residual effects resulting from the Proposed Development on the Water Environment during the construction, operational or decommissioning phase of the Proposed Development.

9.7.11. Overall, following the allocation of the mitigation measures, all residual effects of the Proposed Development during operation are considered to be Negligible.

Mitigation, Enhancement, Residual Effects

9.7.12. Mitigation measures proposed for the Site include:

- SAB advice has been implemented into the drainage strategy design.
- Intentionally through design, the layout ensures that no greater vulnerability infrastructure such as the substation, inverters, transformers or distribution

panels are located within areas at risk of Flooding from Surface Water and Small Watercourses.

- The majority of panels are also excluded from areas at risk of Flooding from Surface Water and Small Watercourses. Moreover, the lowest edge of solar panels proposed on Site will be raised 0.8m above the ground which will ensure existing surface water flow patterns will be maintained.
- Ordinary Watercourses on Site are expected to include a 7m easement that is left undeveloped. As stated in **Chapter 6 – Ecology**, 10m easements will be implemented.
- Development of a surface water drainage strategy to manage surface water runoff an associated flood risk.
- Designing any access crossings over watercourses not to impact current flow patterns.
- Provision of a CEMP and DEMP to manage water resources, flood risk and drainage during construction and decommission.
- Use of SuDS features to provide water quality treatment.

Cumulative Effects

9.7.13. It is not considered necessary to assess in detail any cumulative or in-combination effects as these are not expected to be significant.

9.8. Conclusion

9.8.1. A summary of effects, mitigation and residual effects identified within this chapter of the ES is presented in **Table 9.8** below.

Table 9.8: Summary of Effects, Mitigation and Residual Effects

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Construction								
Main Rivers and Ordinary Watercourses	Impact on the capacity, quality and riparian areas	Temporary	Medium	Low	Local	Minor to Moderate Adverse (Not Significant)	Mitigation measures included in CSWMP and CEMP are to be implemented during construction of the Proposed Development. Watercourse easements of 7 m to be included in the design of the Proposed Development.	**Negligible** **(Not Significant)**
Surface Water Drainage Patterns	Impact on surface water drainage patterns	Temporary	Medium	Low	Local	Minor to Moderate Adverse (Not Significant)	Mitigation measures included in CSWMP and CEMP are to be implemented during construction of the	**Negligible (Not Significant)**

Water Quality (Surface Water & Fluvial)	Impact on water quality	Temporary	Medium	Low	Local	Minor to Moderate Adverse (Not Significant)	Proposed Development.	**Negligible (Not Significant)**
Water Quality (Groundwater)	Impact on water quality	Temporary	Medium	Low	Local	Minor to Moderate Adverse (Not Significant)		**Negligible (Not Significant)**
Operation								
Main Rivers and Ordinary Watercourses	Impact on the capacity, quality and riparian areas	Permanent	Medium	Low	Local	Minor to Moderate Adverse (Not Significant)	Watercourse easements of 7 m to be included in the design of the Proposed Development.	**Negligible (Not Significant)**
Surface Water Drainage Patterns	Impact on surface water drainage patterns	Permanent	Medium	Low	Local	Minor to Moderate Adverse (Not Significant)	Ensuring built infrastructure is located outside of the predicted surface water flow paths where possible. To be managed with the proposed surface	**Negligible (Not Significant)**

							water drainage strategy.	
Water Quality (Surface Water & Fluvial)	Impact on water quality	Permanent	Medium	Low	Local	Minor to Moderate Adverse (Not Significant)	To be managed with the proposed surface water drainage strategy. Use of SuDS features to provide water quality treatment.	**Negligible (Not Significant)**
Water Quality (Groundwater)	Impact on water quality	Permanent	Medium	Low	Local	Minor to Moderate Adverse (Not Significant)		**Negligible (Not Significant)**
Decommissioning								
The effects associated with the decommissioning phase are anticipated to be comparable or less than that associated with the construction phase. Therefore, the magnitude of impact on all receptors is likely to be no more than short term and Adverse at the local scale and therefore not significant. Therefore, effects during decommissioning have been scoped out of assessment.								