



**East Pye Solar
Environmental Statement
Volume 3: Appendix 9.3 - Water Resources
Assessment**

Revision 1

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1 Introduction

1.1 Background

- 1.1.1 A Water Resource Assessment (WRA) has been prepared to accompany the Environmental Statement (ES) for the East Pye Solar including associated facilities on land south of Norwich and north of Harleston (the Scheme).
- 1.1.2 The Scheme comprises the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating station with a total capacity exceeding 100 megawatts (MW) and associated development including a Battery Energy Storage System (BESS), up to three 132 kV Project Substations and up to three 400kV Project Substations, Grid Connection Infrastructure and a new National Grid Substation.
- 1.1.3 The Solar PV electricity generating stations are located across Sites 1, 2, 3, 4, 5, 7, 8, 9 and 10 of the Scheme. Site 6 does not contain an energy generation station, instead being retained for habitat management (refer to **ES: Figure 4.1 Indicative Masterplan [EN0110014/APP/6.2.4.1]**).
- 1.1.4 Cable Route Corridors [1-14] are the area in which export connection cables would be located to connect the Sites to the National Grid Substation (**ES: Figure 4.1 Indicative Masterplan [EN0110014/APP/6.2.4.1]**).
- 1.1.5 Highway Works (**ES: Figure 4.1 Indicative Masterplan [EN0110014/APP/6.2.4.1]**) are sections of the highway network that will contain localised improvements, such as improvements to deteriorated road edges or temporary highway and traffic works required to safely accommodate the Abnormal Indivisible Load (AIL) deliveries to construct the Scheme. These areas will support the movement of construction vehicles on narrower sections of the local highway networks within parts of the construction vehicle routes to the Site (refer to **ES: Chapter 11 Transport and Access [EN0110014/APP/6.1.11]**).
- 1.1.6 The Order Limits are located in East Anglia and water is provided by Anglian Water Services (AWS). AWS has advised that the region is identified as 'seriously stressed' in the EA 2021 classification of water stressed areas and there is a significant risk that water supplies may not be available to meet new non-domestic demands. The WRA will assess the local water availability, and the impact of the Scheme on the supply demand balance across the Order Limits in view of reaching water neutrality.
- 1.1.7 Embedded mitigation has been developed to address any potential likely effects of the Scheme on water availability (supply) or demand.
- 1.1.8 This report is provided to accompany the ES, particularly **ES: Chapter 9 Water Environment [EN110014/APP/6.1.9]**. The production of the WRA addressed the Scoping Opinion and the Preliminary Environmental

Information Report (PEIR) responses from the Environment Agency (EA), Anglian Water (AWS) and the Planning Inspectorate (PINS).

1.2 Objectives

1.2.1 This document outlines the work undertaken for the WRA.

2 Methodology

- 2.1.1 The basis of the WRA is a water balance, which has assessed the sources of supply against the estimated demand for the Order Limits at baseline (2024/2025), and across the three phases of the Scheme (construction, operation and maintenance, and decommissioning), assuming that construction and decommissioning supply and demand are the same i.e. assuming that there are no changes to the supply/demand data during the decommissioning phase.
- 2.1.2 The water supply/demand balance has been completed on all components of the Scheme (as described in **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**), including the Solar PV modules using demand data received from the contractor.
- 2.1.3 The initial step was to establish the baseline water balance for the Order Limits. It is assumed that the current supply demand balance is low and in line with typical agricultural practices, due to the Order Limits being agricultural land. There are also currently no private abstraction licences associated with the Order Limits¹.
- 2.1.4 To understand the supply and demand balance across the three phases, the sources of supply and demand (or assumed water consumption) needed to be established. The Scheme will have a demand for potable and non-potable water, which has been differentiated in the assessment. The proposed embedded mitigation measures will be specific depending on water being used for potable supply or non-potable supply.
- 2.1.5 The potential sources of supply to the area will be considered in Section 4.
- 2.1.6 The current projected water demand for the Scheme for the three phases is as follows:
- Construction phase – 31.13 m³/d (Potable 13.90 m³/d, Non-potable 17.23 m³/d);
 - Operation and maintenance P=phase – 36.92 m³/d (Potable 7.78 m³/d, Non-potable 29.14 m³/d); and
 - Decommissioning – 25.43 m³/d (Potable 12.05 m³/d, Non-potable 13.38 m³/d);
- 2.1.7 The demand figures assume that water consumed during operation is for cleaning of HGVs, modules and equipment, sanitation and a small requirement for potable water. A small volume of water will also be required for landscaping whilst the vegetation establish.
- 2.1.8 The potable water value has been derived using the Viking data assumption of 0.1 m³ required per person on site and there being on average 278 workers

¹ Based on data collected in May 2025

for 542 days during construction and 5 workers for 250 days during operation. Decommissioning has been assumed to be 80% of the labour requirements needed for construction for the purposes of this assessment.

- 2.1.9 It is also assumed that potable water will only be used for hand-washing, and for anything around food or drink preparation, with grey water being used for toilet flushing. This is assumed to be around 0.04-0.06 m³/d.
- 2.1.10 The Scheme will also have a separate fire suppression water allowance of 456m³. This allows for 1,900 litres per minute flow for 4 hours and is based on current NFCC² guidelines. This represents the minimum amount of water required and is recommended to be stored in two tanks to provide redundancy.
- 2.1.11 As part of the WRA, a review of the potential impact on existing lawful water users including both licenced abstractions and unlicenced (private) water supplies has also be undertaken using private water supply data. Where there is potential for significant effects, mitigation measures will also be proposed to reduce the impact to existing water users.

3 Impacts assessment on Supply Demand Balance (embedded mitigation)

- 3.1.1 The sections below outline the water supply and demand balance for the following scenarios for each phase of the Scheme
- Baseline (i.e. pre-Scheme)
 - Proposed Scheme prior embedded mitigation
- 3.1.2 Section 4 below, will outline the water supply and demand balance for the following scenarios for each phase of the Scheme with embedded mitigation.
- 3.1.3 The additional fire suppression demand of 456 m³ at minimum, is not included in the below supply demand balance as this is not a daily demand of water. It is proposed that the fire suppression water is stored in two tanks to provide redundancy.

3.1 Construction

- 3.1.1 **Table 3.1** presents the water supply demand balance for the construction phase of the work. For both the potable and non-potable supply of water, supply demand balance cannot be reached without embedded mitigation.

² <https://nfcc.org.uk/our-services/national-operational-guidance/guidance/>

Table 3.1: Construction Water Supply Demand Balance

Supply Option	Baseline pre-Scheme (m ³ /d)	Proposed Scheme without Embedded Mitigation (m ³ /d)
Potable Water Supply		
Supply	0	0
Demand	0	13.90
Balance	0	-13.90
Non Potable Water Supply		
Supply	0	0
Demand	0	17.23
Balance	0	-17.23

3.2 Operational and Maintenance

3.2.1 **Table 3.2** presents the water supply demand balance for the operation and maintenance phase of the work. Similar to the construction results outlined above, a balanced potable and non-potable supply demand balance cannot be reached without embedded mitigation.

Table 3.2: Operational Water Supply Demand Balance

Supply Option	Baseline pre-Scheme (m ³ /d)	Proposed Scheme without Embedded Mitigation (m ³ /d)
Potable Water Supply		
Supply	0	0
Demand	0	7.78
Balance	0	-7.78
Non-Potable Water Supply		
Supply	0	0
Demand	0	29.14
Balance	0	-29.14

3.3 Decommissioning

3.3.1 **Table 3.3** presents the water supply demand balance for the decommissioning phase of the work. Similar to the construction and operational results outlined above, a balanced potable and non-potable supply demand balance cannot be reached without embedded mitigation.

Table 3.3: Decommissioning Water Supply Demand Balance

Supply Option	Baseline pre-Scheme (m ³ /d)	Proposed Scheme without Embedded Mitigation (m ³ /d)
Potable Water Supply		
Supply	0	0
Demand	0	12.05
Balance	0	-12.05
Non-Potable Water Supply		
Supply	0	0
Demand	0	13.38
Balance	0	-13.38

4 Supply Options Appraisal

4.1.1 As part of the WRA scoping document accompanying the PEIR, a number of potential supply options were identified. The table below outlines the feasibility of each of the options. This takes into account the feedback from the PEIR submission in August 2025. The potential feasible supply-side options will be taken forward into the supply demand balance assessment and the corresponding impact assessment. The proposed potential feasible supply-side options will form the basket of mitigation measures to address any potential SDB deficits identified as part of the WRA.

Table 4.1: Supply Options

Potential Feasible Supply-Side Options	Details	Decision
Potable Water Supply		
New groundwater abstraction	Development of a new groundwater source	Scoped Out- The EA have confirmed they would not accept an application for a new licence due to the water scarcity in the region ³
New surface water abstraction	Development of a new surface water source	Scoped out- The licence would be subject to Hands off Flow (HOF) conditions which would reduce the usability of the licence ³
Anglian Water Supply	Supply of potable water from Anglian Water (unrestricted use of water)	Scoped out- Anglian Water have confirmed as part of the PEIR response that this is not a feasible option due to the water scarcity in the region

³ EA (2017): Broadland Catchment Management Abstraction Strategy. Available from: 227_10_SD01_XXXX Abstraction Licensing Strategy

Potential Feasible Supply-Side Options	Details	Decision
Anglian Water Supply	Supply of potable water from Anglian Water below 20 m ³ /d (restricted use of water)	Scoped out- Anglian Water have confirmed as part of the PEIR response that this is not a feasible option due to the water scarcity in the region
Anglian Water Supply	Supply of potable water from Anglian Water temporarily above 20 m ³ /d (temporary use of water)	Scoped out- Anglian Water have suggested they will consider an application for water if it is above 20 m ³ /d if it is temporary e.g. during construction. However, due to there not being significant variation in the values between construction and operation, this option has been scoped out
Tankering	Tankering of non-water company water	Feasible , subject to a HGV assessment
Non-Potable Water Supply		
Rainwater harvesting	Local rainfall capture. This would need to include storage so that winter rainfall could be stored	Feasible , subject to the client agreeing to the storage option. The rainwater harvesting scheme should be included in the Scheme design and should align with the management of surface water on Site.
Anglian Water Supply	Supply of non-potable (sub-potable) water from Anglian Water below 20 m ³ /d (restricted use of water)	Scoped out- Anglian Water have confirmed as part of the PEIR response that this is not a feasible option due to the water scarcity in the region
Tankering	Tankering of non-water company water	Feasible , subject to a HGV assessment

4.1.2 Further details on the feasible options are outlined in the next section.

4.1.3 Due to new groundwater or surface water abstraction options being scoped out, there is no potential impact on existing lawful water users in the area including both licenced abstractions and unlicenced (private) water supplies. The associated impacts have not been considered any further in the WRA or corresponding ES Chapter. Therefore, no mitigation measures are required.

Potable Supply Options

- 4.1.4 Tankering is considered to be the main option for potable water. Contact with tankering supplies is currently being undertaken during the production of this report. However, given the potable quantities of water required (max 13.9 m³/d), a storage option within the Order Limits should also be considered in conjunction to reduce the number of tankers needed to drive to Site. The traffic/road assessment, related to this mitigation measure, has been completed in **ES: Chapter 11 Transport and Access [EN110014/APP/6.1.11]**.

Non-Potable Water Supply Options

Rainwater Harvesting

- 4.1.5 Rainfall data has been utilised from the Hydrology data explorer for Poringland (TG2833000950) located near Sites 9 and 10 and Fornsett End (TM1438392957) located near Site 2. For the below assessment, data from both rain gauges have been used from 2007-2025 to develop an average rainfall for the Site. **Table 4.2** details the average, maximum and minimum rainfall per month.
- 4.1.6 The rainwater harvesting scheme should be included in the Scheme design and should align with the management of surface water on Site. An option of a silt booster unit could be included to treat the surface water if needed.

Table 4.2: Average, Maximum and Minimum Historic Rainfall (2007-2025) for the Site

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov*	Dec*
Average (mm/d)	1.63	1.71	1.41	1.00	1.61	1.76	1.86	1.70	1.61	2.27	2.20	1.81
Max (mmd/)	2.82	4.06	3.03	3.57	4.04	4.05	3.43	3.77	3.58	4.99	3.58	3.27
Min (mm/d)	0.68	0.18	0.18	0.05	0.17	0.69	0.15	0.35	0.48	0.57	0.73	0.65

*Data for Nov and Dec 2025 is not included

- 4.1.7 On average, there is between 1-3 mm/d, with most months having between 1.6-1.8 mm/d. However, when considering the maximum and minimum range, the Site can be expected to receive between 0.15- 4.99 mm/d depending on the month and year.
- 4.1.8 When combined with the surface area of the solar panels within the Site (26938.95 m²), this results in the following volumes of rainwater being available per month (**Table 4.3**).

Table 4.3: Expected Average, Maximum and Minimum Rainfall runoff for the Site

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov*	Dec*
Average (m³/d)	43.83	45.99	37.91	26.91	43.41	47.47	50.19	45.82	43.44	61.22	59.1	48.9
Max (m³/d)	76.04	109.29	81.51	96.08	108.89	109.10	92.37	101.50	96.53	134.43	96.4	88.2
Min (m³/d)	18.42	4.91	4.94	1.32	4.69	18.68	4.17	9.39	12.93	15.29	19.7	17.4

*Data for Nov and Dec 2025 is not included

4.1.9 When considering, the surface area of the solar panels, this results in there being on average 27-61 m³/d, with most months having between 37-50 m³/d available. When considering the winter months (Dec-Feb) it can be seen that there is up to 135 m³/d available. This is almost four times the demand for all phases of the work. On that basis, it is recommended that the winter rainfall is captured and stored within the Order Limits to aid with the non-potable demand in the spring and summer months. This will also aid with the Sites Surface Water Drainage Strategy outlined in **ES: Chapter 9 Water Environment [EN110014/APP/6.1.9]**.

Tankering

4.1.10 Tankering is also considered an option for non-potable water. As shown in the above section, rainwater harvesting can provide on average 27-61 m³/d of non-potable water. This results in tankering potentially only being an option in the drier months to help meet the non-potable demand. However, tankering may also be a preferred option depending on the required water quality of the non-potable water demand.

4.1.11 Contact is currently being made with water tankering suppliers during the production of this report. However, given the non-potable quantities of water required (max 29.14 m³/d) with part of this demand being resolved by rainwater harvesting, a storage option onsite should also be considered in conjunction to reduce the number of tankers needed to drive to site. The traffic/road assessment has been completed in **ES: Chapter 11 Transport and Access [EN110014/APP/6.1.11]**.

5 Impact assessment on Supply Demand Balance (including Mitigation)

- 5.1.1 The sections below outline the water supply demand balance for the following scenarios for each phase of the Scheme with embedded mitigation.
- 5.1.2 The Embedded Mitigation proposed for the Scheme includes:
- Options to achieve water neutrality options such as offsetting water use by rainwater harvesting measures;
 - On-site water storage to enable water tankering to the Order Limits to meet peak demand; and
 - Provision of water from tankering suppliers
- 5.1.3 Tankering is the preferred method of embedded mitigation, as specified in the **Outline CEMP [EN0110014/APP/7.1]** and **Outline OEMP [EN0110014/APP/7.2]**.
- 5.1.4 As detailed in Section 3, the additional fire suppression demand of 456 m³ at minimum, is not included in the below supply demand balance as this is not a daily demand of water. It is proposed that the fire suppression water is stored in two tanks to provide redundancy.

5.2 Construction

- 5.2.1 **Table 5.1** presents the water supply demand balance for the construction phase of the work with embedded mitigation. For the potable and non-potable supply of water, a balanced supply demand balance can be reached with the embedded mitigation.

Table 5.1: Construction Water Supply Demand Balance

Supply Option	Baseline pre-Scheme (m ³ /d)	Proposed Scheme with Embedded Mitigation (m ³ /d)
Potable Water Supply		
Supply from Tankering	0	13.90
Demand	0	13.90
Balance	0	0
Non-Potable Water Supply		
Supply (from Rainwater Harvesting or Tankering)	0	17.23
Demand	0	17.23
Balance	0	0

5.3 Operation and Maintenance

5.3.1 **Table 5.2** presents the water supply demand balance for the operation and maintenance phase of the work with embedded mitigation. Similar to the construction results outlined above, a balanced potable and non-potable supply demand balance can be reached with embedded mitigation.

Table 5.2: Operational and Maintenance Water Supply Demand Balance

Supply Option	Baseline pre-Scheme (m ³ /d)	Proposed Scheme with Embedded Mitigation (m ³ /d)
Potable Water Supply		
Supply (from AWS or Tankering)	0	7.78
Demand	0	7.78
Balance	0	0
Non Potable Water Supply		
Supply (from AWS, Rainwater Harvesting or Tankering)	0	29.14
Demand	0	29.14
Balance	0	0

5.4 Decommissioning

5.4.1 **Table 5.3** presents the water supply demand balance for the decommissioning phase of the work with embedded mitigation. Similar to the construction and operational results outlined above, a balanced potable and non-potable supply demand balance can be reached with embedded mitigation.

Table 5.3: Decommissioning Water Supply Demand Balance

Supply Option	Baseline pre-Scheme (m ³ /d)	Proposed Scheme with Embedded Mitigation (m ³ /d)
Potable Water Supply		
Supply (from AWS or Tankering)	0	12.05
Demand	0	12.05
Balance	0	0
Non Potable Water Supply		
Supply (from AWS, Rainwater Harvesting or Tankering)	0	13.38

Supply Option	Baseline pre-Scheme (m ³ /d)	Proposed Scheme with Embedded Mitigation (m ³ /d)
Demand	0	13.38
Balance	0	0

6 Summary and next steps

- 6.1.1 The Scheme is located in East Anglia and is considered to be a ‘water-stressed area’ where there is a significant risk that water supplies may not be available to meet new non-domestic demands. The WRA has assessed the local water availability and details the available potential water supply options.
- 6.1.2 The basis of the WRA is a water balance, which assesses the sources of supply against the estimated demand for the Site at baseline (2024), and across the three phases of the Scheme (construction, operation and maintenance, and decommissioning).
- 6.1.3 Water neutrality options have been given priority to reduce the supply requirements. These options include rainwater harvesting, on-site water storage and water tankering (to meet peak demand). These are the Schemes embedded mitigation measures related to water resources. Tankering is the preferred method of supply.
- 6.1.4 When considering the water supply demand balance, a supply demand balance of zero can be achieved for potable supply under all phases of work with embedded mitigation. Embedded mitigation is also required for a supply demand balance for the non-potable supply of water under all phases of the work.
- 6.1.5 It is recommended that the following next steps are completed:
- Continue conversations with local tankering suppliers to confirm that they are able to supply the potable water and non-potable water to reach peak demand. This should align with the traffic management plan. This can be found in **ES: Chapter 11 Transport and Access [EN110014/APP/6.1.11]**
 - Outline a suitable location for the potable and non-potable storage, which aligns with the surface water management strategy (**ES Chapter 9 Water Environment [EN110014/APP/6.1.9]**).

