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Water Demand and Source Options Appraisal

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1. Introduction

- 1.1.1 This Water Demand and Source Options Appraisal has been prepared by Wardell Armstrong LLP (part of SLR) ('WA') on behalf of Beacon Fen Energy Park Ltd (the 'Applicant') in support of an application for a Development Consent Order (DCO) for Beacon Fen Energy Park (the 'Proposed Development').
- 1.1.2 The purpose of this report is to identify and quantify the Proposed Development water demand i.e. how much water will the Proposed Development use; and to identify and evaluate potential water supply source options i.e. what are the preferred water supply options. This report feeds into the wider works undertaken by the Applicant to identify, quantify and evaluate the Proposed Development water demand and water supply options, which will culminate with the detailed design phase of the Proposed Development and is intended to aid the decision making process. This report is based on information included in the **Environment Statement (APP-052 to APP-274)** and other relevant documentation submitted into examination at the time of writing such as **Other Consents and Licences Statement (REP1-005)**.
- 1.1.3 This report presents the calculations related to the estimated water demand of the Proposed Development (Section 2) and a water source options appraisal (Section 3). Specifically, this report considers the water usage during each phase of development (i.e., construction, operation and decommissioning) and considers possible water sources and provides a Red-Amber-Green (RAG) appraisal taking into account environmental, legal and practical aspects of sourcing a water supply from the options considered.

2. Water Demand Calculations

- 2.1.1 Chapter 11 Water Resources and Flood Risk (APP-062) paragraph 11.6.18 identified the key water demands of the Proposed Development:

Construction and Decommissioning Phases:

Potable:

- Drinking Water
- Showers / Emergency Showers

Non-potable:

- Concrete batching
- Dust Suppression
- Welfare – e.g., toilets and hand washing

Operational Phase:

Potable:

- Drinking Water
- Showers / Emergency Showers

Non-potable:

- Welfare – e.g., toilets and handwashing
- Water used for firefighting / suppression and for the testing of the firefighting system
- Panel Cleaning
- Cooling system for batteries
- Irrigation of onsite habitats

- 2.1.2 The Environment Agency (EA) in their Relevant Representation (RR-006) ID: EA08 (consultative water use) requested that Horizontal Directional Drilling (HDD) as a consumptive use of water to be considered. The water demand included in **Chapter 11 Water Resources and Flood Risk (APP-062)** and HDD have been considered in this report as Appendix A (Line 4 of Table A2: Estimate of water demand during construction).
- 2.1.3 Since the production of **Chapter 11 Water Resources and Flood Risk (APP-062)** the Applicant has further refined the Proposed Development water demands and has included the following additional water demands: construction and decommission phases - wheel wash, plant washing, watering during establishment of new hedgerows and native woodland.
- 2.1.4 The estimated water demand for each phase of the Proposed Development has been calculated and presented in Appendix A. This includes the following water demands:
- Table A2: Estimate Of Water Demand During Construction
 - Line 1 Water use for drinking and facilities including toilets and showers
 - Line 2 Watering during establishment of new hedgerows and native woodland
 - Line 3 Dust suppression
 - Line 4 Consumptive water for Horizontal Directional Drilling (HDD)
 - Line 5 Concrete production
 - Line 6 Wheel wash
 - Line 7 Plant washing
 - Table A4: Estimate Of Water Demand During Operation
 - Line 1 Water use for drinking and facilities including toilets and showers
 - Line 2 Water used for firefighting / suppression and for the testing of the firefighting system

- Line 3 Panel Cleaning
 - Line 4 Cooling system for batteries
 - Line 5 Irrigation of onsite habitats
 - Table A5: Estimate Of Water Demand During Decommissioning
 - Line 1 Water use for drinking and facilities including toilets and showers
 - Line 2 Dust suppression
 - Line 3 Wheel wash
 - Line 4 Plant washing
- 2.1.5 Table 1 below, provides a summary of the daily, yearly and total estimated water demand for each phase of the Proposed Development. The total estimated water demand is based upon the upper estimation for the length of the construction (starting in 2027) and decommissioning periods (five years and three years respectfully) and a 40 year period for the operational phase, as discussed in **Chapter 2 Proposed Development (APP-053)**. However, it should be noted that the length of each phase (e.g., construction and decommissioning) has the potential to end earlier than anticipated.
- 2.1.6 Of the three phases, and as set out in **Chapter 11 Water Resources and Flood Risk (APP-063)**, it is estimated that the construction phase will have the highest water demand, with an estimated peak daily water demand of 70m³/day. It is estimated that decommissioning will require 53m³/day and during operation only 7m³/day.

Table 1: Summary of Water Demand Calculations

WATER USE TYPE	CONSTRUCTION PHASE			OPERATIONAL PHASE			DECOMMISSION PHASE		
	TYPICAL RATE PER DAY (M ³ /D)	ANNUAL VOLUME (M ³ /YEAR)	TOTAL FOR CONSTRUCTION PERIOD (5 YEARS) (M ³)	TYPICAL RATE PER DAY (M ³ /D)	ANNUAL VOLUME (M ³ /YEAR)	TOTAL FOR OPERATIONAL PERIOD (40 YEARS) (M ³)	TYPICAL RATE PER DAY (M ³ /D)	ANNUAL VOLUME (M ³ /YEAR)	TOTAL FOR DECOMMISSION PERIOD (3 YEARS) (M ³)
POTABLE	10	3,608	18,042	6	2,186	87,454	6	2,165	6,495
FRESH NON-POTABLE	60	21,816	109,080	1	240	9,600	47	17,312	51,935
TOTAL	70	25,424	127,122	7	2,426	97,054	53	19,477	58,430

3. Water Source Options Appraisal

3.1 Water Source Options

3.1.1 The water source options identified in **Chapter 11 Water Resources and Flood Risk (APP-063)**, and are considered in this appraisal are as follows:

- rainwater harvesting;
- variation to current onsite surface water abstraction licence (4/30/12/*s/0250);
- new surface water abstraction from onsite watercourses within the Order Limits of less than 20m³/day;
- new surface water abstraction from onsite watercourses within the Order Limits of more than 20m³/day;
- new groundwater abstraction from an onsite borehole of less than 20m³/day;
- new groundwater abstraction from an onsite borehole of more than 20m³/day;
- Anglian Water mains water connection of less than 20m³/day; and
- tankering water to the Site.

3.1.2 Table 2 provide a further description of each water source option type.

3.2 RAG Appraisal

3.2.1 In order to aid decision making regarding the most appropriate source(s) of water supply for the Proposed Development, a Red-Amber-Green (RAG) appraisal has been undertaken for the potential water source options. The RAG appraisal is a useful tool to present information in comparative way to facilitate the decision making process. The RAG presented in Table 2 has been based upon available information ahead of detailed design of the Proposed Development. Therefore, once further information is available during detailed design the RAG appraisal can be refined further.

3.2.2 The RAG appraisal presented in Table 2 identified the degree of limitation (i.e. 'High' limitation, 'Medium' limitation and 'Low' limitation) for each of the aspects under consideration, which are:

- regulation and the need for an application;
- application timeframes;
- environmental issues;
- water availability and reliability;
- ownership / third party interests; and
- financial commitment.

3.2.3 Aspects with 'High' limitations were given a Red rating (e.g. if application timeframes were comparatively longer than other water source options), those with 'Medium' limitations were given an Amber rating (e.g. where a limitation is present but would not prevent or substantially impede a water source option)

and those with 'Low' limitations were given a Green rating (see Table 2) (e.g. where there is little to no limitation such as where no application is required).

- 3.2.4 Table 2 also provides an overall summary and an overall limitation category ('High' limitation, 'Medium' limitation or 'Low' limitation). The overall limitation category for each water source option was based on professional judgement considering the number of aspects that were assigned a 'High' limitation / 'Medium' limitation / 'Low' limitation category, and aspects that present significant constraints to the viability of a water source option. Where an aspect presents a significant constraint, this was given a greater weighting when determining the overall limitation category. The aspects with the greatest weighting were water availability and reliability, as without a sufficient water volume / flow rate and reliability, the water source option becomes unviable. Other aspects that had a greater bearing on the overall limitation category were environmental issues and land ownership / third party interest, as these also present significant constraints that would need to be overcome.
- 3.2.5 For the purpose of the RAG appraisal presented in Table 2, each water source option has been considered individually, rather than in combination with other options to present a worse-case scenario for the purposes of the RAG appraisal. It should be noted, in practise a combination of water supply sources are likely to be utilised for the Proposed Development. Section 3.3, in addition to discussion of the outcome of the RAG appraisal for the individual water source options, also provides discussion of potential combined water source options.

Table 2: RAG Appraisal of Water Source Options

ASPECT FOR CONSIDERATION	WATER SOURCE OPTION							
	RAINWATER HARVESTING	VARIATION TO SURFACE WATER ABSTRACTION LICENCE (4/30/12/*S/0250)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (<20M ³ /DAY)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (>20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (<20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (>20M ³ /DAY)	ANGLIAN WATER MAIN WATER CONNECTION (<20M ³ /DAY)	TANKERING
DESCRIPTION	<p>Rainwater harvesting would consist of collecting rainwater via the roofed infrastructure (e.g., office and welfare buildings) at the Site, which would be built during the construction phase and therefore would only be available to supply the Site once these buildings are completed (i.e. at the end of the construction phase and during the operational phase).</p> <p>The EA do not regulate harvested rainwater provided its use does not harm the environment, either alone or combined with other abstractions or transfers.</p>	<p>The current surface water abstraction (4/30/12/*S/0250) is for abstraction from three points along the Hodge Dyke and its tributaries, for storage in an onsite reservoir for approximately 276.5m³ per day, but only during the period of November to March. The abstracted water can currently only be used for irrigation.</p> <p>Therefore, in order to use water from the reservoir for uses other than emergency firefighting, a variation to the licence would be required. A variation could also include a change (addition) to where and how the abstracted water could be stored prior to use (e.g. in tanks within the Solar Array Area in addition to the reservoir).</p>	<p>New surface water abstraction from onsite watercourses within the Order Limits of less than 20m³/day.</p>	<p>New surface water abstraction from onsite watercourses within the Order Limits of more than 20m³/day.</p>	<p>New groundwater abstraction from an onsite borehole of less than 20m³/day. Lincolnshire Limestone aquifer would be the target for the abstraction borehole. This aquifer is around 100m below ground level so the abstraction borehole would need to be drilled to depth of over 100m. A hydrogeological assessment, pumping test and aquifer testing will be required to determine the abstraction borehole yield.</p>	<p>New groundwater abstraction from an onsite borehole of more than 20m³/day. Lincolnshire Limestone aquifer would be the target for the abstraction borehole. This aquifer is around 100m below ground level so the abstraction borehole would need to be drilled to depth of over 100m. A hydrogeological assessment, pumping test and aquifer testing will be required to determine the abstraction borehole yield.</p>	<p>To access water via the Anglian Water mains, a new connection from the Site to the water network would be required. The point of connection would depend on detailed design, however, the Applicant has confirmed the likely point of connection with Anglian Water being the existing Anglian water main along the Howell Lane / Ewerby Lane.</p>	<p>A tankered supply of water involves using vehicles to deliver the water supply to the Site. The water can be sourced from different locations to reduce pressure on one area. This method does not require a licence but requires a store for the water and management of shipments to ensure a consistent supply.</p> <p>For the purposes of the RAG appraisal and to present a 'worst-case' scenario, this water supply option assumes that all of the water required being supplied via tankering.</p>
REGULATION / APPLICATION REQUIRED	<p>No abstraction licence is required. The EA state that an abstraction license is not required for water that only consists of harvested rainwater.¹</p>	<p>Submission of a pre-application request form is required to agree the category of the abstraction licence variation application.</p> <p>The extent of the required changes to the current licence would determine the type of variation; minor, normal or substantial:</p> <ul style="list-style-type: none"> A minor variation does not change the extent of the licence conditions (e.g., cannot increase the volume or change the abstraction point). 	<p>A surface water abstraction of less than 20m³ a day does not require an abstraction licence,² providing the abstraction is part of a single operation.</p> <p>As per The Water Resources Act 1991, Section 27 (1): "<i>The restriction on abstraction shall not apply to any abstraction of a quantity of water not exceeding twenty cubic metres in any period of twenty-four hours.</i>"³</p> <p>Owing to riparian activities, the Land Drainage Act 1991 needs to be considered.</p>	<p>A surface water abstraction of more than 20m³/day requires an abstraction licence from the EA.</p> <p>Regulations include:</p> <ul style="list-style-type: none"> Water Resources Act 1991; The Water Environment (England and Wales) Regulations 2017; and Owing to riparian activities, the Land Drainage Act 1991. <p>If the water is intended to be used as a potable water supply, then it would need to</p>	<p>The abstraction of groundwater less than 20m³ a day does not require an abstraction licence,² providing the abstraction is part of a single operation.</p> <p>As per The Water Resource Act 1991, Section 27 (1): "<i>The restriction on abstraction shall not apply to any abstraction of a quantity of water not exceeding twenty cubic metres in any period of twenty-four hours.</i>"³</p> <p>A consent to investigate (GIC) a groundwater source will be required to perform a</p>	<p>The abstraction of groundwater more than 20m³ a day requires an abstraction licence from the EA.</p> <p>Regulations include:</p> <ul style="list-style-type: none"> Water Resources Act 1991; The Groundwater (England and Wales) Regulations 2009; and The Water Environment (England and Wales) Regulations 2017. <p>A consent to investigate (GIC) a groundwater source</p>	<p>An application to Anglian Water would be required.</p> <p>Anglian Water Developer Services confirmed in response to the Applicant's pre-development enquiry form via email on 18th June 2024 that in principle a 20 cubic metres per day supply could be provided to the Solar Array Area location, without reinforcement charges.</p> <p>As per the Water Supply (Water Fittings) Regulations 1999, Anglian Water are required to inspect new pipework (and associated</p>	Not Applicable

¹ Environment Agency (2021). Rainwater Harvesting: regulatory position statement [online]. Accessed August 2025. Available at: <https://www.gov.uk/government/publications/rainwater-harvesting-regulatory-position-statement/rainwater-harvesting-regulatory-position-statement>.

² Environment Agency (2025). Guidance: Check if you need a licence to abstract water [online]. Accessed August 2025. Available at: <https://www.gov.uk/guidance/check-if-you-need-a-licence-to-abstract-water#abstract-groundwater>.

³ UK Government (1991). Water Resources Act 1991 [online]. Accessed August 2025. Available at: <https://www.legislation.gov.uk/ukpga/1991/57/section/27>.

ASPECT FOR CONSIDERATION	WATER SOURCE OPTION							
	RAINWATER HARVESTING	VARIATION TO SURFACE WATER ABSTRACTION LICENCE (4/30/12/*S/0250)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (<20M ³ /DAY)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (>20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (<20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (>20M ³ /DAY)	ANGLIAN WATER MAIN WATER CONNECTION (<20M ³ /DAY)	TANKERING
		<ul style="list-style-type: none"> A normal variation can increase the volume of water to be abstracted. A substantial variation would require a full reassessment due the extent of the changes being substantial enough so that the original assessment is no longer valid. <p>Regulations include:</p> <ul style="list-style-type: none"> Water Resources Act 1991; The Water Environment (England and Wales) Regulations 2017; and Owing to riparian activities, the Land Drainage Act 1991. <p>If the water is intended to be used as a potable water supply, then it would need to be registered with Lincolnshire County Council as a Private Water Supply.</p>	If the water is intended to be used as a potable water supply, then it would need to be registered with Lincolnshire County Council as a Private Water Supply.	be registered with Lincolnshire County Council as a Private Water Supply.	hydrogeological yield testing (e.g. pumping test). ⁴ If the water is intended to be used as a potable water supply, then it would need to be registered with Lincolnshire County Council as a Private Water Supply.	will be required to perform a hydrogeological yield testing (e.g. pumping test). ⁴ If the water is intended to be used as a potable water supply, then it would need to be registered with Lincolnshire County Council as a Private Water Supply.	<p>fittings) before any connections can be made to the existing water network.⁵ Other utilities must be at least 350mm away from the water pipe if they are in the same trench.</p> <p>Depending on the final route (to be determined at detailed design), the new sections of pipeline may need to cross watercourses and roads. If so, additional consents may be required.</p>	
ESTIMATED APPLICATION TIMEFRAME	Not Applicable	<p>Pre-application and preparation of an application of a licence variation can take approximately 3 to 4 months.</p> <p>The determination time for a normal variation of a surface water abstraction permit is 4 months. This can vary depending on the category of the variation that the EA agree to in the pre-application stage.</p> <p>In total, it is estimated that the application timeframe is 8 months.</p>	Not Applicable	<p>The abstraction licence application preparation is estimated to take approximately 6 months (excluding EA requested water flow survey or monitoring), and determination of an application can take 6 months.</p> <p>In total, it is approximated that an abstraction license may take 12 months. However, if the EA require water flow study, this could be increased.</p>	<p>According to the EA, once a GIC has been submitted, the EA will reply within 10 workings days. Post EA review, a water features survey may potentially be required and submitted to the EA. The EA will review the survey and reply with 15 workings days. Therefore, this could take around 1 month.</p> <p>The drilling and testing of the borehole and any observation boreholes for the hydrogeological testing could take 4-6 weeks (excluding testing and</p>	<p>The abstraction licence application preparation is estimated to take approximately 7 months (inclusive of the GIC application process), and determination of an application can take 6 months. In total, it is approximated that an abstraction license may take 12 to 13 months.</p> <p>According to the EA, once a GIC has been submitted, the EA will reply within 10 workings days. Post EA review, a water features survey may potentially be</p>	<p>The following timescales are for Anglian Water determination:</p> <ul style="list-style-type: none"> Connection without special requirements – 21 calendar days; Connection in traffic sensitive roads – 28 calendar days; Connection where roads need to be closed – 3 months <p>In addition, the preparation of the application can take 1 to 2 months.</p>	Not Applicable

⁴ Environment Agency (2023). Apply for consent to investigate groundwater source [online]. Accessed August 2025. Available at: <https://www.gov.uk/government/publications/apply-for-consent-to-investigate-a-groundwater-source/apply-for-consent-to-investigate-a-groundwater-source>.

⁵ Anglian Water (2025). How to lay a new or replacement supply pipe [online]. Accessed August 2025. Available at: <https://www.anglianwater.co.uk/siteassets/developers/water-services/aws-lay-a-new-or-replacement-supply-pipe.pdf>.

ASPECT FOR CONSIDERATION	WATER SOURCE OPTION							
	RAINWATER HARVESTING	VARIATION TO SURFACE WATER ABSTRACTION LICENCE (4/30/12/*S/0250)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (<20M ³ /DAY)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (>20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (<20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (>20M ³ /DAY)	ANGLIAN WATER MAIN WATER CONNECTION (<20M ³ /DAY)	TANKERING
					appointment of the drilling contractor). In total, the process, is likely to be around 2.5 months.	required and submitted to the EA. The EA will review the survey and reply with 15 workings days. Therefore, this could take around 1 month.	Therefore, the entire application process is likely to take around 3 months.	
ENVIRONMENTAL ISSUES	Owing to the small area of the buildings compared to the catchment size, the effects of removing rainwater from the local hydrological and hydrogeological regime would be minimal / unnoticeable.	The reservoir has amenity and ecological value. Wintering bird surveys (APP-094) to support the DCO application have observed gadwall ducks using the reservoir over winter. The removal of water from the reservoir itself during the bird wintering season could, therefore, affect the population present. A variation to the licence to allow for storage in tanks within the Solar Array Area, in addition to the reservoir, would avoid removal of water from the reservoir itself. The abstraction would need to be managed to maintain water levels in the reservoir during the bird wintering season and provide water supply to the tanks.	A reduction in water level could affect the watercourse flow dynamics and channel hydrogeomorphology as well as reduce available water for downstream water users. Ecological surveys for riparian mammals undertaken in 2022 and 2023 by AECOM (APP-098) classed all surveyed watercourses within the Solar Array Area as being sub-optimal or unsuitable for wale vole and otters and, in addition, no evidence of either species was record onsite. Due to the lack of suitable habitats and no riparian mammals being present they are not considered a constraint.	A reduction in water level could affect the watercourse flow dynamics and channel hydrogeomorphology as well as reduce available water for downstream water users. Ecological surveys for riparian mammals undertaken in 2022 and 2023 by AECOM (APP-098) classed all surveyed watercourses within the Solar Array Area as being sub-optimal or unsuitable for wale vole and otters and, in addition, no evidence of either species was record onsite. Due to the lack of suitable habitats and no riparian mammals being present they are not considered a constraint.	The target strata for the abstraction borehole is the Lincolnshire Limestone, which is a principal aquifer. Theoretically, boreholes from the surface to the aquifer can become a pathway for pollutants if not managed correctly. It should be noted that measures (e.g., Pollution Prevention and Control Method Statement (PPCMS)) (REP1-009) in the OCEMP and the design of the abstraction borehole and decommission of observation boreholes after the hydrogeological testing mean that this has a very low risk of occurring. The Solar Array Area is not located in a groundwater source protection zone (SPZ) and EA data requests for abstraction licenses have not identified any other groundwater abstractions within 2 km of the Solar Array Area. This means that the introduction of a new borehole abstraction is unlikely to affect other groundwater abstractors.	The target strata for the abstraction borehole is the Lincolnshire Limestone, which is a principal aquifer. Theoretically, boreholes from the surface to the aquifer can become a pathway for pollutants if not managed correctly. It should be noted that measures (e.g., Pollution Prevention and Control Method Statement (PPCMS)) (REP1-009) in the OCEMP and the design of the abstraction borehole and decommission of observation boreholes after the hydrogeological testing mean that this has a very low risk of occurring. The Solar Array Area is not located in a groundwater SPZ and EA data requests for abstraction licenses have not identified any other groundwater abstractions within 2 km of the Solar Array Area. This means that the introduction of a new borehole abstraction is unlikely to affect other groundwater abstractors.	Issues expected to be very minimal, but temporary earthwork disturbances / generation of sediment relating to the installation of pipework. Depending on the route, the new sections of pipeline may need to cross watercourses and roads. If so, there could be temporary effects on these that can be managed through the CEMP and Construction Traffic Management Plan (CTMP).	For the purposes of the RAG appraisal and to present a 'worst-case' scenario, this water supply option assumes that all of the water being supplied via tankering. Tankering would increase the number of Heavy Good Vehicle (HGV) movements in and around the Site. These could lead to congestion, noise and air quality effects, as well as effects on carbon emissions. However the anticipated increase in the number of HGV movements is unlikely to have a material impact on the transport assessment Compared to other water source options, this is generally considered the least environmentally friendly water source option under consideration.
WATER AVAILABILITY AND RELIABILITY	The available footprint for a rainwater harvesting system is very small (limited to the area of roofs). this, therefore, limits the amount of water available. In addition, during periods of no precipitation, there would be no water	The current abstraction licence can take 276.5m ³ per day, but this is limited to the November to March period. Therefore, storage of the water would be required and (as discussed in the environmental issues section) the amenity and ecological importance of the reservoir may mean this	Under this option, the maximum amount that can be abstracted is 20m ³ /day. Where water is not being used, it could be stored onsite and accessed later when needed. During dry periods, availability / reliability may become reduced.	The Solar Array Area falls under the AP7 (South Forty Foot Outfall) catchment on the Witham Abstraction Licensing Strategy. ⁶ According to AP7, water resource availability is "available" for the Q30 flow scenario, "restricted" for the Q50 scenario and "not	Under this option, the maximum amount that can be abstracted without a licence is 20m ³ /day. Where water is not being used, it could be stored onsite and accessed later when needed. The Lincolnshire Limestone aquifer is a principal aquifer,	Regarding the Witham Abstraction Licensing Strategy, the Site falls within a "red" zone which states that groundwater within the Lincolnshire Limestone is not available for new consumptive abstraction. The possibility of trading water abstraction rights with	Under this option, the maximum amount that can be abstracted is 20m ³ /day. Where water is not being used, it could be stored onsite and accessed later when needed. Water availability and reliability is almost a certainty due to connection	The availability and reliability of water relies on the frequency and volume of water being supplied to the Site via tankers. In addition, the water would be to a potable standard.

⁶ Environment Agency (2020). Witham Abstraction Licensing Strategy [online]. Accessed August 2025. Available at: <https://www.gov.uk/government/publications/witham-abstraction-licensing-strategy/witham-abstraction-licensing-strategy#How-we-manage>

ASPECT FOR CONSIDERATION	WATER SOURCE OPTION							
	RAINWATER HARVESTING	VARIATION TO SURFACE WATER ABSTRACTION LICENCE (4/30/12/*S/0250)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (<20M ³ /DAY)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (>20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (<20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (>20M ³ /DAY)	ANGLIAN WATER MAIN WATER CONNECTION (<20M ³ /DAY)	TANKERING
	<p>supply unless this has been stored previously.</p> <p>Water is likely to be relatively clean, so is unlikely to need extensive treatment prior to use.</p>	<p>storage would need to be elsewhere (i.e. a designated tank).</p> <p>The water use of the current abstraction is for irrigation. Therefore, the use of the abstracted water would need to be varied to include additional uses related to the Proposed Development (see Section 2) and for alternative storage of the water.</p> <p>Presently, the water quality of the surface water is unknown. Additionally, future works would, therefore, include water quality testing and screening of results against Environmental Quality Stands (EQS) and Drinking Water Quality Standards (DrWQS) before use to determine if it is suitable and, if needed, what level of water treatment would be required.</p>	<p>Presently, the water quality of the surface water is unknown. Additionally, future works would, therefore, include water quality testing and screening of results against Environmental Quality Stands (EQS) and Drinking Water Quality Standards (DrWQS) before use to determine if it is suitable and, if needed, what level of water treatment would be required.</p>	<p><i>available</i>" for the Q70 and Q90 flow scenarios.</p> <p>Therefore, approximate 146 days are available a year for abstraction and 34.8Ml/d available volume for the catchment. Therefore, there is likely to be a restriction on the volume and time of year surface water abstractions can occur.</p> <p>Presently, the water quality of the surface water is unknown. Additionally, future works would, therefore, include water quality testing and screening of results against Environmental Quality Stands (EQS) and Drinking Water Quality Standards (DrWQS) before use to determine if it is suitable and, if needed, what level of water treatment would be required.</p>	<p>which indicates that it is generally productive.</p> <p>Presently, the water quality of the groundwater is unknown. Additionally, future works would, therefore, include water quality testing and screening of results against Environmental Quality Stands (EQS) and Drinking Water Quality Standards (DrWQS) before use to determine if it is suitable and, if needed, what level of water treatment would be required.</p>	<p>another party could be explored.</p> <p>Presently, the water quality of the groundwater is unknown. Additionally, future works would, therefore, include water quality testing and screening of results against Environmental Quality Stands (EQS) and Drinking Water Quality Standards (DrWQS) before use to determine if it is suitable and, if needed, what level of water treatment would be required.</p>	<p>to the mains. In addition, the water would be to a potable standard.</p>	
OWNERSHIP/ THIRD PARTY INTEREST	<p>Rainwater harvesting requires no third party interest and ownership issues.</p>	<p>Variation of the current abstraction licence would require consent from the current holder. If the current licence holder does not agree to transfer / varying the licence, then this option is no longer viable.</p>	<p>The riparian rights of downstream and adjacent rights holders would need to be taken into account when selecting abstraction locations, and the amount of water to be abstracted on a particular day (i.e. ensuring to not dewater a watercourse). For example, if a watercourse forms the boundary between you and a neighbour, the law presumes that you own to the centre point of the watercourse. This means that you and your neighbour are responsible for the maintenance and water flow within the watercourse.⁷</p>	<p>The riparian rights of downstream and adjacent rights holders would need to be taken into account when selecting abstraction locations, and the amount of water to be abstracted on a particular day (i.e. ensuring to not dewater a watercourse). For example, if a watercourse forms the boundary between you and a neighbour, the law presumes that you own to the centre point of the watercourse. This means that you and your neighbour are responsible for the maintenance and water flow within the watercourse.⁸</p>	<p>This borehole would be located within the Site boundary. Therefore, no third party interests.</p>	<p>This borehole would be located within the Site boundary. Therefore, no third party interests.</p>	<p>The water supply is provided by Anglian Water and would be metered and possibly subject to inspection and auditing by Anglian Water.</p>	<p>Water tanker suppliers will need to be contracted to organise the volumes of water, frequency of deliveries and any changes to the demand onsite.</p>

⁷ Lincolnshire County Council (2025). Riparian Ownership [online]. Accessed August 2025. Available at: <https://www.lincolnshire.gov.uk/flood-risk-management/riparian-landownership>

⁸ Lincolnshire County Council (2025). Riparian Ownership [online]. Accessed August 2025. Available at: <https://www.lincolnshire.gov.uk/flood-risk-management/riparian-landownership>

ASPECT FOR CONSIDERATION	WATER SOURCE OPTION							
	RAINWATER HARVESTING	VARIATION TO SURFACE WATER ABSTRACTION LICENCE (4/30/12/*S/0250)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (<20M ³ /DAY)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (>20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (<20M ³ /DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (>20M ³ /DAY)	ANGLIAN WATER MAIN WATER CONNECTION (<20M ³ /DAY)	TANKERING
ESTIMATED APPLICATION CHARGES / FINANCIAL COMMITMENT	Average cost of a fully functioning domestic system is between £2,000 and £3,000. The actual cost would depend on the area of roof and size of collection tanks.	Based on the current EA charging scheme: ⁹ <ul style="list-style-type: none"> Normal Variation for abstraction up to and including 50MI a year is £2,005. Substantial Variation for abstraction up to and including 50.MI a year is £3,608 <p>There are EA annual subsistence charges. In addition, there is likely to be costs associated with legal fees.</p>	Not Applicable	Based on the current EA charging scheme: <ul style="list-style-type: none"> Abstraction application for abstraction up to and including 50MI a year is £4,010. <p>There are EA annual subsistence charges.</p>	Approximately £20,000 to £40,000 for cost of drilling a borehole and performing hydrogeological testing (depending on whether observation boreholes are required).	Based on the current EA charging scheme: <ul style="list-style-type: none"> Abstraction application for abstraction up to and including 50MI a year is £4,010. <p>There are EA annual subsistence charges. There are no application fees for GIC.</p> <p>Approximately £20,000 to £40,000 for cost of a drilling borehole and performing hydrogeological testing (depending on whether observation boreholes are required).</p>	The median cost for a 4m stretch of pipework on a verge is £715 according to Ofwat. ¹⁰ <p>According to Anglian Water, cost of a new connection is potentially £1,765.00. Additional costs will apply for traffic management (e.g., road closures and traffic lights).¹¹</p> <p>There would also be a meterage charge by Anglian Water once a connection is established.</p>	Based on similar projects, if only tankering is used for water supply, cost could be between £500k and £1m.
OVERALL SUMMARY	<ul style="list-style-type: none"> Low cost. Low / no environmental issues. No licence application required. No ownership or third party interests. Only low volumes of water likely to be available and there is a need for water storage onsite. Water is likely to be reasonably clean. 	<ul style="list-style-type: none"> Existing abstraction licence will supply daily abstraction rate to meet predicted water demand. The license would need to be varied and ideally transferred to Beacon Fen Energy Park Limited. Application process is likely to be around 8 months. Presence of gadwall ducks in winter, plus amenity and ecological value of the reservoir makes using the reservoir for water storage undesirable. Alternative could be varying the licence to include the addition of storage tanks. 	<ul style="list-style-type: none"> Limited to only 20m³/day. No licence application required. Need to be aware of riparian rights holders and impacts downstream of abstraction points. Water availability might be low in summer and dry periods. Unknown water quality. 	<ul style="list-style-type: none"> Abstraction licence application required. There is restricted water availability for consumptive abstraction licensing. Therefore, there is likely to be restrictions on time of year water can be abstracted, so reliant on stored water (onsite) during dry periods. Unknown water quality. Around 1 year from start of application to determination. Ongoing annual subsistence fees to the EA. Need to be aware of riparian rights holders and impacts downstream of abstraction points. 	<ul style="list-style-type: none"> Limited to only 20m³/day. High one-off cost for drilling and testing a borehole. No licence application required. No ownership or third party interests. Around 2.5 months for GIC application and drilling and testing works. Unknown water quality. 	<ul style="list-style-type: none"> Water unavailable for new consumptive abstractions. Water trading could be explored. High one-off cost for drilling and testing a borehole and ongoing annual subsistence fees to the EA. Abstraction licence application required. No ownership or third party interests around 1 year from start of application to determination. Unknown water quality. 	<ul style="list-style-type: none"> Limited to only 20m³/day (no reinforcement charges would apply for this volume). Water of potable standard. Requires consent from Anglian Water and may need additional consent depending on connection route. Application charges and metered usage charges. Anglian Water would have a third party interest in the connection and volume used. 	<ul style="list-style-type: none"> Depending on volume of water tankered, this option can be potentially costly. Requires management of water supply to ensure water is delivered ahead of being required. Increase in traffic numbers and associated effect. Not considered to be an environmental or sustainable option to rely on to solely meet the Proposed Developments water requirements. Water of potable standard.

⁹ Environment Agency (2025). The Environment Agency (Environmental Permitting and Abstraction Licensing) (England) Charging Scheme 2022: amendments up to 18 August 2025 [online]. Accessed August 2025. Available at: <https://assets.publishing.service.gov.uk/media/68a34acecd7b7dcfaf2b5e64/LIT-17156-Environmental-Permitting-and-Abstraction-Licensing-Charging-Scheme-2022-amendments-up-to-18-August-2025.pdf>

¹⁰ Ofwat (2025). Getting a connection [online]. Accessed August 2025. Available at: <https://www.ofwat.gov.uk/households/supply-and-standards/getting-a-connection/>

¹¹ Anglian Water (2023). Anglian Water Development Services: summary of Charges [online]. Accessed August 2025. Available at: <https://www.anglianwater.co.uk/SysSiteAssets/developers/help--advice/summary-of-charges-2022-2023.pdf>

ASPECT FOR CONSIDERATION	WATER SOURCE OPTION																	
	RAINWATER HARVESTING	VARIATION TO SURFACE WATER ABSTRACTION LICENCE (4/30/12/*S/0250)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (<20M³/DAY)	NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (>20M³/DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (<20M³/DAY)	NEW GROUNDWATER BOREHOLE ABSTRACTION (>20M³/DAY)	ANGLIAN WATER MAIN WATER CONNECTION (<20M³/DAY)	TANKERING										
<table><tr><th colspan="2">KEY</th></tr><tr><th>RATING</th><th>LIMITATION CATEGORY</th></tr><tr><td>Red</td><td>'High' limitation</td></tr><tr><td>Amber</td><td>'Medium' limitation</td></tr><tr><td>Green</td><td>'Low' limitation, which includes those aspects that are not applicable to a particular water source option e.g. tankering does not require an application so the 'Regulation / Application Required' aspect is not applicable and give a 'Green' rating.</td></tr></table>									KEY		RATING	LIMITATION CATEGORY	Red	'High' limitation	Amber	'Medium' limitation	Green	'Low' limitation, which includes those aspects that are not applicable to a particular water source option e.g. tankering does not require an application so the 'Regulation / Application Required' aspect is not applicable and give a 'Green' rating.
KEY																		
RATING	LIMITATION CATEGORY																	
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3.3 Discussion

3.3.1 Table 3 presents a summary of the water supply options RAG appraisal. In regard to assigning an overall limitation category to each option, as discussed in Section 3, the limitation category with a majority in the total number of aspects determined the overall limitation category, except where an aspect or aspects presented significant constraint to the viability of a water source option.

Table 3: Summary of RAG Appraisal for Water Supply Options

WATER SUPPLY OPTION	LIMITATION CATEGORY	REGULATION / APPLICATION REQUIRED	ESTIMATED APPLICATION TIMEFRAME	ENVIRONMENTAL ISSUES	WATER AVAILABILITY AND RELIABILITY	OWNERSHIP/ THIRD PARTY INTEREST	ESTIMATED APPLICATION CHARGES / FINANCIAL COMMITMENT	TOTAL	OVERALL LIMITATION CATEGORY
RAINWATER HARVESTING	H							1	Low
	M							0	
	L							5	
VARIATION TO SURFACE WATER ABSTRACTION LICENCE (4/30/12/*S/0250)	H							3	Medium
	M							2	
	L							1	
NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (<20M³/DAY)	H							0	Low
	M							2	
	L							4	
NEW SURFACE WATER ABSTRACTION FROM ONSITE WATERCOURSES WITHIN THE ORDER LIMITS (>20M³/DAY)	H							1	Medium
	M							4	
	L							1	
NEW GROUNDWATER BOREHOLE ABSTRACTION (<20M³/DAY)	H							0	Low
	M							2	
	L							4	
NEW GROUNDWATER BOREHOLE ABSTRACTION (>20M³/DAY)	H							2	High
	M							2	
	L							2	
ANGLIAN WATER MAIN WATER CONNECTION (<20M³/DAY)	H							0	Medium
	M							4	
	L							2	
TANKERING	H							2	Medium
	M							1	
	L							3	
Notes									
H = 'High' limitation. M = 'Medium' limitation. L = 'Low' limitation.									

3.3.2 The following water supply options were evaluation and there was a clear majority for one limitation category:

- Rainwater Harvesting – ‘Low’ limitation (five out of six aspects were Green);
- New Surface Water Abstraction from Onsite Watercourses within the Order Limits (<20m³/day) – ‘Low’ limitation (four out of six aspects were Green);
- New Surface Water Abstraction from Onsite Watercourses within the Order Limits (>20m³/day) – Medium limitation (four out of six aspects were Amber);
- New Groundwater Borehole Abstraction (<20m³/day) – ‘Low’ limitation (four out of six aspects were Green); and
- Anglian Water Main Water Connection (<20m³/day) – ‘Medium’ limitation (four out of six aspects were Amber).

3.3.3 ‘Medium’ limitation was selected for the Variation to Surface Water Abstraction Licence (4/30/12/*s/0250). Although the majority of the aspects were assigned the ‘High’ limitation category, the water availability and reliability aspects was a ‘Low’ limitation (See Table 3), which as discussed in paragraph 3.2.4 holds a greater weighting the overall limitation classification. This is because there is already an abstraction licence with sufficient daily abstraction rate to meet the needs of the Proposed Development. The ‘High’ limitation aspects were timeframes, environmental issues and ownership / third party issues. In regard to timeframe, although the application process is likely to be around 8 months, there is sufficient time between determination of the DCO (expected by September 2026) and the start of the construction period (anticipated earliest construction start date to be in 2027) to undertake the works required to implement this option. Therefore, timeframe in this context is not a limiting aspect. Likewise, although agreement with the current licence holder is likely to be needed, there have been earlier discussions with the holder, and they have indicated that they are open to explore this option further. Therefore, the only aspect that does pose a realised issue for this water supply option is the amenity and ecological importance of the reservoir. To overcome this, it is recommended that the licence be varied in addition to the abstracted water uses to also allow an alternate storage tank(s) (i.e. pumped from the abstraction point directly to the storage tanks without intervening storage in the reservoir). By using storage tanks, this eliminates the need to interfere with the reservoir; thereby removing the environmental issues aspect ‘High’ limitation category. If the use of storage tanks is not viable and the reservoir would be the only storage option, then the overall limitation category would be ‘High’ limitation.

3.3.4 A ‘High’ limitation was selected for New Groundwater Borehole Abstraction (>20m³/day) as there was an even split across the three limitation categories. Water availability and reliability aspects were also considered to be a ‘High’ limitation due to the Lincolnshire Limestone aquifer being classed within EA’s Witham abstraction licensing strategy⁶ as unavailable for new consumptive abstractions. This means that a new application is unlikely to be granted. The potential for trading water abstraction rights could be explored, which would involve finding a willing trading partner with the capacity to trade part or all of their abstraction right (volume water abstracted).

3.3.5 'Medium' limitation was selected for Tankering despite the majority being for the 'Low' limitation category, because there were 'High' limitation categories for environmental issues and financial commitment aspects. This was because, in reality, this would be extremely expensive and less environmentally sustainable to only rely on a tankered water supply when there are generally less environmental harmful options available (i.e., rainwater harvesting, and abstractions from local supplies (e.g. watercourse and groundwater). However, it is foreseeable to see tankering as one possible option to supplement other water source options, as is the typical case for many other developments, particularly in the following scenarios:

- at the start of construction to facilitate the enabling works and establishment of other water source options;
- during dry periods where surface water or rainwater is unavailable or cannot be abstracted; and
- to provide the potable water supply for the Proposed Development. A low quantity of potable water is required: the highest estimated daily potable water demand is 10m³/day during construction falling to 6m³/day in operation and decommissioning (see Appendix A). Therefore, this would limit potential increase in traffic movements and reduce environmental effects. In addition, at present, the quality of water and the suitability of the water for potable supply for surface water and groundwater sources is unknown, so a tankered supply of potable water could be used when water treatment costs are uneconomical.

3.4 Recommendations

3.4.1 Following the RAG appraisal, the following recommendations can be made:

- 1) Rainwater harvesting is only likely to produce a small quantities of water daily and would only be available once roof structures are built / brought to Site (i.e., construction and decommissioning phase temporary welfare units and at the end of the construction phase / during the operational phase when the buildings such as the office are completed) due to this option requiring rooftops. Therefore, a possible viable use of this water would be to provide the water supply to the office and welfare during the operational phase. A storage tank sized to storage rainwater during wetter periods could be designed into the buildings to help to mitigate loss of a direct supply during dry periods. In addition, the Anglian Water Main Water Connection (<20m³/day) option and / or tankering could also provide a back-up supply if this option is taken forwards.
- 2) A variation to Surface Water Abstraction Licence (4/30/12/*s/0250) is recommended, which would comprise of changes to the description of the abstraction and the water use, so it reflects the activities associated with water demands, as identified in Appendix A. The description of the abstraction would be varied to change the water storage to add tanks within the Solar Array Area in addition to the reservoir, which would retain as water storage for irrigation purposes (i.e. the current agricultural use). It is not proposed to vary the abstraction quantity or the abstraction locations. The current licence allows abstraction of 276.5m³/day, which is in excess

of the estimated highest typical daily abstraction rate of 70m³/day for the Proposed Development. Legal agreement with the current licence holder may be required.

- 3) The New Surface Water Abstraction From Onsite Watercourses within the Order Limits (<20m³/day) and New Groundwater Borehole Abstraction (<20m³/day) options both appear to be suitable options for non-potable supplies with the borehole option likely to be able provide year-round abstraction more consistently than the surface water. However, the estimated highest typical daily abstraction rate of 70m³/day could not be achieved without supplementing the supply from an alternative source (e.g. tankering, mains water or a licensed abstraction) or without abstraction for water storage in onsite tanks.
- 4) New Groundwater Borehole Abstraction (>20m³/day) is currently not recommended unless a willing and able trading partner can be found.
- 5) An Anglian Water Main Water Connection (<20m³/day) does appear worth exploring further. The highest estimated water demand for potable water is 10m³/day and a main water connection, which would be of potable standard, could supply this volume. If potable water demand is provided by main water connection then it would allow other water supply options to be used on non-potable uses.
- 6) Relying solely on a tankered supply is not recommended when there are other viable options, for environmental and economic reasons. However, tankering to supplement and support other water sources is likely to be required to meet the overall objectives of the Proposed Development. The anticipated increase in the number of HGV movements due to the use of tankering for part of the water supply is unlikely to have a material impact on the transport assessment
- 7) Water used for firefighting purposes is exempt from abstraction licensing and the Proposed Development will be designed to store water for firefighting purposes. The volume will depend on the prevailing National Fire Protection Association (NFPA) / National Fire Chiefs Council (NFCC) / other guidance at the time of the detailed Battery Safety Management Plan (secured pursuant to requirement) but is currently expected to be in the region of 240m³. This would be installed/commissioned in parallel with the BESS installation/commissioning. After a fire or after the testing of the firefighting systems there will be a requirement to recharge the firefighting storage tanks as soon as possible after depletion. The possible options are a borehole, the water stored associated with varied Surface Water Abstraction Licence (4/30/12/*s/0250), main water connection or tankering. During the hydrogeological testing of a new borehole abstractions, a constant rate test is preformed to calculate the performance and yield of the abstraction. The Lincolnshire Limestone aquifer is a productive aquifer and is confined underneath the Site, which suggests that it with may be able to produce the yield required for the fire tank recharge. The water stored associated with the varied Surface Water Abstraction Licence (4/30/12/*s/0250) could also be used, but sufficient capacity of the storage tanks would need to be provided with ring fencing of the water required for the fire tanks to ensure it is always available. Main

water connection or tankering of water to top up the firewater tanks, cannot be ruled out as a backup option given the purpose of the infrastructure and the 40 year operational lifetime. Main water connection or tankering would typically be used if neither the borehole nor surface water abstraction are available at a given point in time or are not able to provide the required quantity in the required timeframe.

4. Conclusion

4.1.1 This Water Demand and Source Options Appraisal has identified a number of viable water source options, which would support the predicated Proposed Development water demand for each phase of the Proposed Development. The next steps of the of the water demand and water supply works include the following:

- to further refine the water demand calculation based on the detailed design of the Proposed Development (post-determination);
- undertake site investigations / collect specific data to support further evaluation of water source options e.g. undertake water quality and flow monitoring and / or hydrogeological testing (post-determination);
- undertake pre-application discussion with Environment Agency / Anglian Water (if required depending on water supply source options to be pursued) (post-determination); and
- submit application(s) to the relevant consenting authority (i.e. Environment Agency / Anglian Water (if required depending on water supply source options to be pursued)) (post-determination).

Appendix A Water Demand Calculations

Table A1: Key Parameters Used To Estimate Water Demand During Construction

KEY INPUTS	UNIT	VALUE	ASSUMPTION	SOURCE
Peak daily onsite workforce	workers	433	Paragraph 2.14.8 of Chapter 2 – Proposed Development (APP-053) - At the peak of construction, which is anticipated to be in 2027, it is estimated there will be 433 staff members	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Working hours per week	hours	55	Paragraph 2.14.9 of Chapter 2 – Proposed Development (APP-053) - The core working hours considered in this ES will be as follows. However, these working hours may be reduced during winter months reflective of the seasonal daylight hours: 0700 – 1900 Monday to Friday 0800 – 1300 Saturdays Subject to the paragraph below, no works will take place on Sundays or Bank Holidays	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Solar array area	m ²	5,290,000	529 ha for the total area of the solar array	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Cable route corridor area	m ²	1,830,000	183 ha for cable route corridor	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Bespoke access route area	m ²	455,000	45.5 ha for bespoke access route	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Length of cable route corridor	m	13,000	-	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Length of bespoke access route	m	3,000	-	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Length of access tracks within the solar array area	m	46,000	Array is ca. 2.3 km x 2.3 km based on the area given above. Assume 10 tracks north south and 10 tracks east west.	-
Width of access tracks	m	6.25	3.5 to 9 m	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
No. vehicle movements per day	Number	424	Vehicle movements at peak construction	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
No. HGV movements per day	Number	82	HGV movements at peak construction	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Solar array construction time	Days	1098	Paragraph 2.14.2 of Chapter 2 – Proposed Development (APP-053) - All material construction on the Solar Array Area will follow the completion of the Bespoke Access Road and last between 24 to 36 months. Some limited preparatory works may be carried out on the Solar Array Area simultaneously to the construction of the Bespoke Access Road.	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Cable connection construction time	Days	732	The Bespoke Access Road and Cable Route can commence construction at the same time and are anticipated to last between: o Bespoke Access Road: 6 to 12 months o Cable Connection: 12 to 24 months	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf

Table A2: Estimate Of Water Demand During Construction

LINE NO.	ACTIVITY	QUALITY REQUIREMENT	PEAK DAILY RATE (M ³ /D)	TYPICAL DAILY RATE AVERAGED OVER 1 YEAR (M ³ /D)	PARAMETER				CALCULATION EXPLANATION	SOURCE 1	SOURCE 2
					1	2	3	4			
1	Water use for drinking and facilities including toilets and showers	Potable	60.39	9.9	433	0.14	33%	50%	Parameter 1 = peak no. workers on site [no. workers] (see Construction key parameters) Parameter 2 = typical household per person consumption [m ³ /d] (139.42 l per person per day, source 1) Peak rate calculated as Parameter 1 x Parameter 2 Typical rate is factored by the proportion of site working hours in a typical week (see Construction key parameters) and assumes 50% of peak staff on average [Parameter 4].	Defra, 2025. Outcome Indicator Framework for the 25 Year Environment Plan: E8 ¹²	-
2	Watering during establishment of new hedgerows and native woodland	Fresh Non-potable	132.6	7.9	0.50%	7,575,000	3.5	0.06	Outline landscape and ecological management plan indicates watering during establishment of hedgerows and native woodland. Area has been estimated as 0.5% [Parameter 1] of the total area of the development [Parameter 2, m ²] (to be updated as better design information is provided) Water demand is based on a crude averaging of potential evaporation calculated from data at the Redmere COSMOS station (Source 2). [Parameter 3, mm/d] Peak demand is Parameter 1 x Parameter 2 x Parameter 3. Typical daily rate over 1 year assumes weekly watering May to September inclusive (5 months) therefore peak daily rate is factored according to Parameter 4	Appendix 6.7 – Outline Landscape and Ecological Management Plan (APP-089) ¹³	COSMOS-UK Redmere site data ¹⁴
3	Dust suppression	Fresh Non-potable	339.1	41.8	6.25	15,500	3.5	0.12	Parameter 1 = width of access track [m] (see Construction key parameters) Parameter 2 = length of tracks [m] (see construction key parameters) x 0.25 assuming that only 25% of the length will need to be irrigated on any one day Parameter 3 = evaporation estimate [mm/d] (as for watering above) Parameter 4 = factor to convert peak rate into daily average rate assuming need is only in May, June, July we have assumed 5 days and in August we assumed 20 and 10 in September. Peak rate calculated as parameter 1 x parameter 2 x parameter 3. typical rate is peak rate x parameter 4	-	-
4	Consumptive water for Horizontal Directional Drilling (HDD)	Fresh Non-potable	10	0.24	0.1	100	35	50	Parameter 1 = water required per metre of drilling (m ³) (upper estimate based on professional experience) Parameter 2 = rate of drilling (metre per day for 1 rig, estimate based on professional experience) Parameter 3 = no. trenchless (HDD) water course crossings (source 1) Parameter 4 = drilling length per crossing (m) Peak rate = Parameter 1 x Parameter 2 Typical rate = Parameter 1 x Parameter 3 x Parameter 4 / duration of cable route construction (see Construction key parameters)	Chapter 11 – Water Resources and Flood Risk (APP-062) ¹⁵	-
5	Concrete production	Fresh Non-potable	-	0.48	0.3	10	176.3	1,098	Parameter 1 = water required per tonne of cement (assumption) [m ³] Parameter 2 = mass concrete required per area of solar panels (assumption) [tonnes per ha] Parameter 3 = area of solar panels (assume 1/3 of solar array area) [ha] Parameter 4 = construction period for solar array (days) (see Construction key parameters) Typical use = Parameter 1 x Parameter 2 x Parameter 3 / Parameter 4 Although based on notional size of solar array, the daily quantity of water estimated for this purpose is considered representative of use throughout construction of cable route and access track, too. Assumes that large pours e.g. for BESS platform, transformer bases etc will be completed using readymix i.e. not requiring water at site.	-	-
6	Wheel wash	Fresh Non-potable	12.7	5.0	30	424	0.4	-	Parameter 1 = volume of water required per vehicle per day for wheel washing (Source 1, litres per day) Parameter 2 = no. vehicle movements per day (peak construction) (see Construction key parameters) Peak daily rate = parameter 1 x parameter 2 Typical rate assumes 50% of peak vehicle movements over 5.5 day working week (parameter 3 used as a factor) Typical rate = peak rate x Parameter 3	The Sizewell C Project 8.4 Revision: 2.0 Applicable Regulation: Regulation 5(2)(q) PINS Reference Number: EN010012 Planning Statement Appendix 8.4K: Site Water Supply Strategy ¹⁶	-
7	Plant washing	Fresh Non-potable	61.5	4.4	0.75	82	0.1	-	Parameter 1 = volume of water required per vehicle for plant washing assuming water recycling is in place (Source 1, m ³) Parameter 2 = no. HGV movements per day (peak construction) (see Construction key parameters). Assuming that this number is proportional to amount of plant requiring washing on site. Peak daily rate = parameter 1 x parameter 2 Typical rate assumes 50% of peak vehicle movements and that plant washing is weekly Typical rate = peak rate x Parameter 3	The Sizewell C Project 8.4 Revision: 2.0 Applicable Regulation: Regulation 5(2)(q) PINS Reference Number: EN010012 Planning Statement Appendix 8.4K: Site Water Supply Strategy ¹⁷	-

¹² <https://oifdata.defra.gov.uk/themes/natural-resources/E8/>

¹³ <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000123-6.3.19%20Appendix%206.7%20Outline%20Landscape%20and%20Ecological%20Management%20Plan.pdf>

¹⁴ <https://cosmos.ceh.ac.uk/sites/RDMER>

¹⁵ <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000096-6.2.11%20Chapter%2011%20Water%20Resources%20and%20Flood%20Risk.pdf>

¹⁶ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-007011-Sizewell%20C%20Project%20-%20208.4%20Planning%20Statement%20-%20Appendix%208.4K%20-%20Site%20Water%20Supply%20Strategy%20-%20Revision%202.0.pdf>

¹⁷ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-007011-Sizewell%20C%20Project%20-%20208.4%20Planning%20Statement%20-%20Appendix%208.4K%20-%20Site%20Water%20Supply%20Strategy%20-%20Revision%202.0.pdf>

Table A3: Key Parameters Used To Estimate Water Demand During Operation

KEY INPUTS	UNIT	VALUE	ASSUMPTION	SOURCE
Average daily onsite workforce	workers	6	Anticipated that 12 full time jobs will be created during operational phase with 6 present onsite at any one time (paragraph 4.11.1 of Chapter 2 – Proposed Development (APP-053))	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000094-6.2.9%20Chapter%209%20Access%20and%20Traffic.pdf
Solar array area	m ²	5,290,000	529 ha for the total area of the solar array	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Stored fire water volume	m ³	240	Volume of water storage for firefighting stored at the site as stated in the Environmental Statement project description	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf

Table A4: Estimate Of Water Demand During Operation

LINE NO.	ACTIVITY	QUALITY REQUIREMENT	PEAK DAILY RATE (M ³ /D)	TYPICAL DAILY RATE AVERAGED OVER 1 YEAR (M ³ /D)	PARAMETER				CALCULATION EXPLANATION	SOURCE 1
					1	2	3	4		
1	Water use for drinking and facilities including toilets and showers	Potable	-	0.84	6	0.14	-	-	Parameter 1 = average no. workers on site [no. workers] (see Operation key parameters) Parameter 2 = typical household per person consumption [m ³ /d] (139.42 l per person per day, source 1)	Defra, 2025. Outcome Indicator Framework for the 25 Year Environment Plan: E8 ¹⁸
2	Water used for firefighting / suppression and for the testing of the firefighting system	Fresh Non-potable	240	0.66	240	365	-	-	Peak rate is volume of fire water stored at the site (see Operation Key parameters, Parameter 1). Notes that this is consistent with the volume calculated from National Fire Chiefs Council guidance that requires a "water supply should be able to provide a minimum of 1,900 l/min for at least 120 minutes (two hours)." Typical rate calculated assuming that system will be tested annually at full capacity, the annual average rate is peak rate divided by no days in a year [parameter 2]	National Fire Chiefs Council, 2022. Grid Scale Battery Energy Storage System planning – Guidance for FRS. Version 1.0 November 2022 ¹⁹
3	Panel Cleaning	Potable	470	5.2	5,290,000	0.33	0.27	4	Solar panels typical dimension is 1.5 x 2.5 m (Source 1) but no. panels is not known. Therefore, assumed that area of panels requiring cleaning will be 1/3 [Parameter 1, see operation key parameters] land area of the solar array [Parameter 2]. Water application rate is estimated to be 1 l per panel (1 l per 3.75 m ²) [Parameter 3, l per m ²]. Peak rate assumes all panels cleaned in 1 day (not realistic, included only for clarity of calculation). Typical rate assumes cleaning 4 times per year [Parameter 4]	Environmental Statement Chapter 2: Proposed Development (APP-053) ²⁰
4	Cooling system for batteries	Fresh Non-potable	-	0	-	-	-	-	Assumed that BESS units will cooled using a system that doesn't require water (e.g. air or bespoke fluid cooling)	-
5	Irrigation of onsite habitats	Fresh Non-potable	-	0	-	-	-	-	Assumed that there is no requirement for watering during operation based on Source 1	Appendix 6.7 – Outline Landscape and Ecological Management Plan (APP-089) ²¹

¹⁸ <https://oifdata.defra.gov.uk/themes/natural-resources/E8/>

¹⁹ <https://nfcc.org.uk/wp-content/uploads/2023/10/Grid-Scale-Battery-Energy-Storage-System-planning-Guidance-for-FRS.pdf>

²⁰ <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf>

²¹ <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000123-6.3.19%20Appendix%206.7%20Outline%20Landscape%20and%20Ecological%20Management%20Plan.pdf>

Table A5: Key Parameters Used To Estimate Water Demand During Decommission

KEY INPUTS	UNIT	VALUE	ASSUMPTION	SOURCE
Peak daily onsite workforce	workers	259.8	Assumed to be 60% of the peak construction phase staff - Paragraph 2.14.8 of Chapter 2 – Proposed Development (APP-053) - At the peak of construction, which is anticipated to be in 2027, it is estimated there will be 433 staff members.	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Working hours per week	hours	55	Paragraph 2.14.9 of Chapter 2 – Proposed Development (APP-053) - The core working hours considered in this ES will be as follows. However, these working hours may be reduced during winter months reflective of the seasonal daylight hours: 0700 – 1900 Monday to Friday 0800 – 1300 Saturdays Subject to the paragraph below, no works will take place on Sundays or Bank Holidays	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Length of cable route corridor	m	13,000	-	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Length of bespoke access route	m	3,000	-	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
Length of access tracks within the solar array area	m	46,000	Assumption. Array is ca. 2.3 km x 2.3 km based on the area given above. Assume 10 tracks north south and 10 tracks east west.	-
Width of access tracks	m	6.25	3.5 to 9 m	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
No. vehicle movements per day	Number	254.4	Vehicle movements at peak decommission phase (assumed to be 60% of Construction phase peak vehicle movements)	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000086-6.2.2%20Chapter%202%20Proposed%20Development.pdf
No. HGV movements per day	Number	49.2	HGV movements at peak decommission phase (assumed to be 60% of Construction phase peak HGV movements)	https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010151-000094-6.2.9%20Chapter%209%20Access%20and%20Traffic.pdf

Table A5: Estimate Of Water Demand During Decommission

LINE NO.	ACTIVITY	QUALITY REQUIREMENT	PEAK DAILY RATE (M ³ /D)	TYPICAL DAILY RATE AVERAGED OVER 1 YEAR (M ³ /D)	PARAMETER				CALCULATION EXPLANATION	SOURCE 1
					1	2	3	4		
1	Water use for drinking and facilities including toilets and showers	Potable	36.24	5.9	259.8	0.14	33%	50%	Parameter 1 = peak no. workers on site [no. workers] (see Decommission key parameters) Parameter 2 = typical household per person consumption [m ³ /d] (139.42 l per person per day, source 1) Peak rate calculated as Parameter 1 x Parameter 2 Typical rate is factored by the proportion of site working hours in a typical week (see Decommission key parameters) and assumes 50% of peak staff on average [Parameter 4].	Defra, 2025. Outcome Indicator Framework for the 25 Year Environment Plan: E8 ²²
2	Dust suppression	Fresh Non-potable	339.1	41.8	6.25	15,500	3.5	0.12	Parameter 1 = width of access track [m] (see Decommission key parameters) Parameter 2 = length of tracks [m] (see Decommission key parameters) x 0.25 assuming that only 25% of the length will need to be irrigated on any one day Parameter 3 = evaporation estimate [mm/d] (as for watering above) Parameter 4 = factor to convert peak rate into daily average rate assuming need is only in May, June, July we have assumed 5 days and in August we assumed 20 and 10 in September. Peak rate calculated as parameter 1 x parameter 2 x parameter 3. typical rate is peak rate x parameter 4	-
3	Wheel wash	Fresh Non-potable	7.6	3.0	30	254.4	0.4	-	Parameter 1 = volume of water required per vehicle per day for wheel washing (Source 1, litres per day) Parameter 2 = no. vehicle movements per day (peak construction) (see decommission key parameters) Peak daily rate = parameter 1 x parameter 2 Typical rate assumes 50% of peak vehicle movements over 5.5 day working week (parameter 3 used as a factor) Typical rate = peak rate x Parameter 3	The Sizewell C Project 8.4 Revision: 2.0 Applicable Regulation: Regulation 5(2)(q) PINS Reference Number: EN010012 Planning Statement Appendix 8.4K: Site Water Supply Strategy ²³
4	Plant washing	Fresh Non-potable	36.9	2.6	0.75	49.2	0.1	-	Parameter 1 = volume of water required per vehicle for plant washing assuming water recycling is in place (Source 1, m ³) Parameter 2 = no. HGV movements per day (peak decommission) (see decommission key parameters). Assuming that this number is proportional to amount of plant requiring washing on site. Peak daily rate = parameter 1 x parameter 2 Typical rate assumes 50% of peak vehicle movements and that plant washing is weekly Typical rate = peak rate x Parameter 3	The Sizewell C Project 8.4 Revision: 2.0 Applicable Regulation: Regulation 5(2)(q) PINS Reference Number: EN010012 Planning Statement Appendix 8.4K: Site Water Supply Strategy ²⁴

²² <https://oifdata.defra.gov.uk/themes/natural-resources/E8/>

²³ <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010012/EN010012-007011-Sizewell%20C%20Project%20-%20208.4%20Planning%20Statement%20-%20Appendix%208.4K%20-%20Site%20Water%20Supply%20Strategy%20-%20Revision%202.0.pdf>

²⁴ <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010012/EN010012-007011-Sizewell%20C%20Project%20-%20208.4%20Planning%20Statement%20-%20Appendix%208.4K%20-%20Site%20Water%20Supply%20Strategy%20-%20Revision%202.0.pdf>