Stonestreet Green Solar

Environmental Statement
Volume 4: Appendices
Chapter 10: Water Environment
Appendix 10.3: Water Framework Directive Assessment

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Acronyms and Abbreviations

WFD	Water Framework Directive
DCO	Development Consent Order
Ha	Hectares
PV	Photovoltaic
HDD	Horizontal Directional Drilling
EA	Environment Agency
RBMP	River Basin Management Plan
IDB	Internal Drainage Board
KCC	Kent County Council
CA	Competent Authority
FRAP	Flood Risk Activity Permit
LDC	Land Drainage Consent

1.0 Introduction

1.1 This Water Framework Directive ('WFD') Assessment has been prepared on behalf of EPL 001 Limited ('the Applicant') to provide an assessment of the Project under the Water Framework Directive in relation to the Development Consent Order ('DCO') application for Stonestreet Green Solar ('the Project').

The Project

1.2 The Project comprises the construction, operation, maintenance, and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.

1.3 The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts ('MW'). The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the existing National Grid Sellindge Substation via a new 132 kilovolt ('kV') substation constructed as part of the Project and cable connection under the Network Rail and High Speed 1 ('HS1') railway.

1.4 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.

Scope

1.5 Advice Note Eighteen: The Water Framework Directive published by the Planning Inspectorate on 1 June 2017, version 1 ('PINS Advice Note 18')[1] sets out the requirements of the WFD, EU Directive 2000/60/EC and The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the '2017 Regulations')[2]. The Planning Inspectorate's Advice Note 18 provides advice on relevant bodies that should be consulted in respect of the WFD and the information applicants must provide with their application in order to clearly demonstrate that the WFD and the 2017 Regulations have been appropriately considered.

1.6 Regulation 5(2)(l)(iii) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 ('APFP Regulations') requires applicants (where applicable) to provide an assessment of the effects on water bodies likely to be caused by the proposed development. This information is provided in this WFD Assessment. Applicants are also required to provide a plan showing the relevant water bodies within a River Basin Management Plan ('RBMP') to which their development proposal relates, which is provided as **ES Volume 3, Figure 10.3: Local Hydrology (Doc Ref. 5.3)**.

Consultation

1.7 The EIA Scoping Report for the Project **(ES Volume 4, Appendix 1.1: EIA Scoping Report (Doc Ref. 5.4)**) proposed to scope out a WFD assessment. This was on the basis that adverse effects from the Project would be avoided through implementation of appropriate mitigation measures secured via the Construction Environmental Management Plan ('CEMP'), including a standoff of 10m between infrastructure and waterbodies, pollution prevention measures, sediment management measures etc. The Scoping Report concluded that the Project is not likely to interfere with a Water Body's objectives or the ability to maintain/achieve good status.

1.8 In response, in the EIA Scoping Opinion for the Project (**ES Volume 4, Appendix 1.2: EIA Scoping Opinion (Doc Ref. 5.4)**), the Planning Inspectorate stated:

> *'Scoping Report paragraphs 11.3.2 and 11.5.2 state that there is potential for watercourse crossings but these are not described in the project description and it is unknown whether potential crossings are for vehicles, cable routing etc. Without details of what crossings are proposed or potential associated impacts on WFD waterbodies, the Inspectorate cannot agree to scope this matter out. The ES should provide a WFD assessment and this should be used to inform the ES assessment.'*

1.9 Controls and mitigation around key activities along the East Stour River and the proposed scope of the WFD Assessment were discussed in a meeting between SLR and the Environment Agency ('EA') on 2 August 2023. Within that meeting the EA confirmed the following points;

- With reference to the WFD the main activities of concern were the temporary bridges over the East Stour River and horizonal direction drilling ('HDD') beneath the East Stour. River

- That these activities will be subject to Flood Risk Activity Permits ('FRAP').
- The temporary bridges should be designed to be 600mm above the bank elevation with abutments set 1m back from the top of the bank.
- A specific risk assessment should be undertaken for the HDD drilling and included as part of the DCO application, but that the HDD design and also the risk assessment will need to be updated and refined post approval with reference to intrusive investigations.

1.10 Email correspondence received from the EA on 12 September 2023 (**Annex C**) confirmed that they were content for the scope of the WFD Assessment (Stage 2) to focus on the temporary bridges over the East Stour River and HDD beneath the East Stour River.

1.11 The Stage 1 screening assessment (see Section 4.0) however considers all water bodies and Project activities in line with Advice Note 18.

2.0 WFD Assessment Background

Introduction

2.1 WFD Assessments are undertaken to demonstrate that the proposed works can be undertaken without impacting the status of water bodies or prevent future works to enable the water bodies to achieve good status / potential.

2.2 This section explains the legislative background to undertaking WFD Assessments and the methodology to the WFD Assessment undertaken of the Project.

Legislative Background

2.3 The WFD EC Directive 2000/60/EC[3] aims to protect and enhance the quality of the water environment across all European Union member states. England and Wales have adopted the WFD as national law through the 2017 Regulations[2]. Following the departure of the UK from the EU these Regulations continue to apply.

2.4 The overall aims and objectives of the WFD are to:

- enhance the status and prevent further deterioration of surface water bodies, groundwater bodies and their ecosystems;
- ensure progressive reduction of groundwater pollution;
- reduce pollution of water, especially by Priority Substances and Certain Other Pollutants (Annex II, Environmental Quality Standards (EQS) Directive (2008/105/EC) as amended);
- contribute to mitigating the effects of floods and droughts;
- achieve at least good surface water status for all surface water bodies and good chemical status in groundwater bodies by 2015 (Article 4, Water Framework Directive (WFD) (2000/60/EC)) (or good ecological potential in the case of artificial or heavily modified water bodies); and
- promote sustainable water use.

2.5 Under the WFD, EU members committed to achieving at least good qualitative and quantitative status of all water bodies by 2015. It was not possible to achieve this by 2015 and therefore the outstanding water bodies had further objectives set for 2021 or 2027.

2.6 Under the WFD, water bodies are defined as rivers, lakes, reservoirs, streams, canals, transitional, coastal or groundwater bodies. Designated artificial water bodies ('AWB') or Heavily Modified Water Bodies ('HMWB') are also defined by the WFD. An AWB is defined as a body of surface water created by human activity. A HWMB is defined as a body of surface water which as a result of physical alterations by human activity is substantially changed in character.

2.7 The WFD Regulations have established river basin districts for which RBMPs have been developed by the Competent Authority that detail the actions (a programme of measures) required to meet 'good' status objectives. The Competent Authority in England is the EA. Each river basin is managed to achieve at least 'good' status according to RBMPs. RBMPs set out how the objectives set for the river basin are to be reached within the required timescale.

2.8 Any activities, such as new development, that potentially could lead to deterioration in the status of a water body, or would render proposed improvement measures ineffective, would be contrary to the WFD.

2.9 An explanation of the WFD classifications for surface water bodies and groundwater bodies is provided below.

Determination of Good Status

Surface Water Bodies

2.10 Good status of surface water bodies is determined from the ecological and chemical status. For a surface water body to be in overall '*good*' status both ecological and chemical status must be at least '*good*'. Ecological status is recorded on a scale '*high*', '*good*', '*moderate*', '*poor*' and '*bad*' with chemical status recorded as '*good*' or '*fail*'.

2.11 The overall ecological status of a water body is primarily based on consideration of its biological quality '*elements*' and determined by the lowest scoring of these. These biological '*elements*' are, however, in turn supported by the physio-chemical and hydromorphological quality '*elements*'.

2.12 The chemical status assessment is based on the concentrations or presence of various '*priority*' substances.

2.13 Whilst the assessment of hydromorphological quality is not explicitly required for a water body to achieve moderate ecological status or lower, to achieve the overall of '*good*' status or higher, hydromorphological quality is considered within the classification assessment.

Groundwater Bodies

2.14 There are two separate classifications for groundwater water bodies; quantitative and chemical. The WFD requires that groundwater must achieve 'good' quantitative status and 'good' chemical status by their objective year. For a groundwater water body to be in overall '*good*' status, both quantitative and chemical status must be '*good*'. Groundwater status is either recorded as '*good*' or '*poor*'.

2.15 The chemical status refers to the environmental quality standards for river basin specific pollutants and the priority substances specified under the WFD. The quantity status considers elements such as the ability to serve groundwater and surface water abstractions, and support groundwater dependent terrestrial ecosystems.

AWB and HMWB

2.16 AWB and HMWB may be prevented from reaching good status due to the modifications necessary to maintain their function. They are, however, required to achieve 'good' ecological potential, through implementation of a series of mitigation measures outlined in the applicable RBMP.

Guidance

2.17 Guidance on how to undertake WFD assessments is provided in the Water Framework Directive risk assessment - How to assess the risk of your activity'[4] and the Planning Inspectorate's Advice Note Eighteen: The Water Framework Directive[1].

2.18 This WFD assessment is prepared with reference to these guidance documents.

3.0 Assessment Methodology

3.1 This section explains the general approach to how the WFD Assessment was undertaken.

Assessment Process

3.2 In line with the general approach described in the Planning Inspectorate's Advice Note Eighteen, the assessment is progressed in three stages which are summarised below:

- **Stage 1 – WFD screening:** a review to determine if there are activities associated with the Project that do not require further consideration (see **Section 4.0**);
- **Stage 2 – WFD scoping:** to identify risks of the proposed activities to receptors based on the relevant water bodies and their water quality elements. This involves collating baseline information relevant to each water body such as status, objectives and parameters for each water body (see **Section 5.0**); and
- **Stage 3 – WFD impact assessment:** a detailed assessment (if required) of water bodies and their quality elements that are considered likely to be affected by the Project, identification of any areas of non-compliance; consideration of mitigation measures, enhancements, and contributions to the RBMP objectives (see **Section 6.0**).

3.3 Where mitigation measures or activities are relied on to demonstrate compliance with the objectives, this is clearly set out with an explanation of how this is secured.

3.4 Where a WFD assessment identifies the potential for a deterioration in the water body and it is not possible to mitigate, the Project would need to be assessed in the context of Article 4.7 of the WFD. This is known as a ‘derogation'.

Basis of the Assessment

3.5 The WFD Assessment is based on baseline water environment information presented in **ES Volume 2, Chapter 10: Water Environment (Doc Ref. 5.2)** and this report.

3.6 The assessment has been informed by information on the proposed Project and activities set out in the **Works Plans (Doc Ref. 2.3)**, **Design Principles (Doc Ref. 7.5)**, **Draft Development Consent Order ('DCO') (Doc Ref. 3.1)** and **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**, and proposed watercourse crossings as set out in **ES Volume 4, Appendix 10.5: Schedule of Watercourse Crossings (Doc Ref. 5.4)**.

Study Area and Baseline Data Collection

3.7 The study area for the WFD assessment extends to the Order limits, as shown by **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**, and all land within 1km of the Order limits.

3.8 A range of baseline data sources were used to understand the current status of water bodies as well as future baseline conditions including:

- South East River Basin District River Basin Management Plan[5];
- WFD status and objectives from the appropriate RMBP, available from the EA Catchment Data Explorer[6]; and
- Identification of hydrogeological conditions and groundwater resources (including groundwater vulnerability and productivity) (British Geological Survey[7], Magic Map[8]) together with secondary information relating to:
    - bedrock and superficial geology mapping;
    - soil mapping; and
    - **ES Volume 4, Appendix 11.3: Ground Investigation Report (Doc Ref. 5.4)** and **ES Volume 4, Appendix 11.4: Revised Conceptual Site Model (Doc Ref. 5.4)**.

3.9 A site walkover was undertaken on 24 and 25 July 2023 to survey surface water features on, and in proximity to, the Site. This walkover included visual inspection of the Site to validate the understanding of the hydrological conditions at the Site. Further details of this survey are provided in **Annex A.**

3.10 Further site visits to survey the location of existing and proposed watercourse crossing were undertaken on the 23 January and 7 February 2024. Photographs and finding from these visits are provided in **ES Volume 4, Appendix 10.5: Schedule of Watercourse Crossings (Doc Ref. 5.4)**.

4.0 Stage 1 - WFD Screening

4.1 This section seeks to screen which activities associated with the Project have the potential to impact WFD water bodies.

4.2 In line with the Planning Inspectorate's Advice Note 18 this WFD screening exercise seeks to:

- identify the relevant RBMPs and water bodies and confirm the zone(s) of influence based on aspects of the proposed development that could affect the identified water bodies;
- consider aspects of the proposed development that could affect the identified water bodies; and
- confirm which activities are screened out and why.

4.3 Activities which have the potential to impact a WFD water body are those which, in theory, could alter the chemical or biological quality of a water receptor if a suitable linkage or pathway exist. The absence of suitable pathway and the effect of embedded mitigation within the design may in reality mean that these could not or will not pose a significant risk. These mitigating factors are however considered in Stage 2 (Scoping).

RBMPs and Water Bodies

4.4 For the purposes of this WFD assessment an initial assessment area extending 1km from the Order limits has been applied for identifying WFD water bodies that could conceivably be impacted by the Project. The risk to water bodies outside of this zone is considered to be negligible.

4.5 The Site, and the entire assessment area, is located within the area covered by the South East River Basin District River Basin Management Plan[9] ('RBMP'). The RBMP provides an overview of local WFD water bodies with further water body and reach specific data available through the EA Catchment Data Explorer[10].

4.6 The environmental objectives covered by the RBMP are:

- preventing deterioration of the status of surface waters and groundwater;
- achieving objectives and standards for protected areas;

- aiming to achieve good status for all water bodies;
- reversing any significant and sustained upward trends in pollutant concentrations in groundwater;
- cessation of discharges, emissions and losses of priority hazardous substances into surface waters; and
- progressively reducing the pollution of groundwater and preventing or limiting the entry of pollutants.

4.7 The local catchment hydrology, including WFD surface water bodies, is shown on **ES Volume 3, Figure 10.3: Local Hydrology (Doc Ref. 5.3)** and details of a walkover survey of local surface water features are provided in **Annex A**.

4.8 The hydrogeological context, including WFD groundwater water bodies, is shown on **ES Volume 3, Figure 10.3: Local Hydrology (Doc Ref. 5.3)**.

4.9 As illustrated on that figure the Project only interacts with a small number of WFD water bodies. These are briefly described below.

East Stour Water Body - Surface Water Body (GB107040019640)

4.10 The majority of the Site is located in the hydrological catchment of the East Stour River and the river channel passes through the Site. Under the WFD this river system is referred to as the East Stour Water Body.

Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)

4.11 Land in the south eastern corner of Field 8 does not drain into the East Stour River and instead drains south towards the Royal Military Canal. This system is assessed under the WFD as a part of the Romney Marsh between Appledore and West Hythe Surface Water Body.

Kent Greensand Eastern - Groundwater Body (GB40701G501400)

4.12 The Kent Greensand Eastern Water Body covers small areas within the Order limits to the north of the Site within Fields 25 and 26.

Project Activities

4.13 This section outlines key information about the Project and associated activities which are relevant to the WFD Assessment. The Project

description is detailed in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**.

4.14 The Project is described in Schedule 1 of the **Draft DCO (Doc Ref. 3.1)** where the "Authorised Development" is described using the relevant Work No. each part of the Project relates to. Each Work No. is summarised as follows:

- **Work No. 1:** a ground mounted solar photovoltaic generating station with a gross electrical output capacity of over 50 megawatts;
- **Work No. 2:** balance of system and battery energy storage system ('BESS') works;
- **Work No. 3:** project substation and associated works;
- **Work No. 4:** works to lay high voltage electrical cables and extend Sellindge Substation to facilitate grid connection;
- **Work No. 5:** associated works;
- **Work No. 6:** works to provide site access;
- **Work No. 7:** construction and decommissioning works;
- **Work No. 8:** works to create, enhance and maintain green infrastructure, boundary treatments and crossing structures; and
- **Site Wide Works:** further associated development in connection with the Project.

4.15 Construction of the Project is anticipated to commence in 2026 and construction works are anticipated to take 12 months. The proposed operational period for the Project is 40 years. The decommissioning phase is also anticipated to take 12 months.

Screening of Proposed Activities

4.16 Table 4-1 screens each activity required to deliver the Project, as set out in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**. Only activities screened as 'In' are then taken forward to scoping of risk in Section 5.0.

Table 4-1: Screening of Project Activities against potential risk to WFD status

Project Component	Description and Justification	Screened in / out
Work No. 1 – a ground mounted solar photovoltaic generating station with a gross electrical output capacity of over 50 megawatts		

Project Component		Description and Justification	Screened in / out
1.1	Solar PV modules and mounting structures	Lightweight structures with minimal impact on runoff requiring limited construction and shallow foundation.	Out
Work No. 2 – Balance of System and BESS			
2.1	Inverter Stations	Moderate earthworks required to create platform area and which will result in an increase in impermeable surface area.	In
2.2	Battery Energy Storage System	Co-located with inverter stations with no additional construction related risks. A potential ongoing fire risk exists and therefore consideration is required for management and control of firewater via storm water systems.	In
2.3	Intermediate substations	Co-located with inverter stations with no additional construction related risks.	Out
2.4	Acoustic Barriers	Lightweight structures with minimal impact on runoff requiring limited construction and shallow foundation	Out
Work No. 3 – Project Substation and associated works			
3.1	Project Substation	Significant engineering activity with piling required resulting in an increase in impermeable surface area. Located within the Kent Greensand Eastern Groundwater Body and discharging towards the East Stour Water Body.	In
Work No. 4 – Works to lay high voltage electrical cables and extend Sellindge Substation to facilitate grid connection			
4.1	Grid Connection Cable	Engineering activity which will be in proximity to the East Stour Water Body in places. Possible requirement for dewatering of excavations and requirement for discharge to surface channels draining to the East Stour Water Body.	In
4.2	HDD for Grid Connection Cable	Direct engineering activity in proximity to and beneath the East Stour Water Body.	In

Project Component		Description and Justification	Screened in / out
4.3	Sellindge Substation Extension	Small uplift in platform area with all runoff directed via existing National Grid systems and associated controls. No uplifts to runoff rates or changes in water quality of discharges are likely.	Out
Work No. 5 – associated works			
5.1	Site fencing, gates and boundary treatment	Lightweight structures with no impact on runoff requiring limited construction and shallow foundations.	Out
5.2	Lighting, Security and Monitoring	No impact on water quality or quantity and no lighting in direct proximity to surface channels.	Out
5.3	Cabling (excluding the Grid Connection Cable)	Engineering activity which will be in proximity to surface channels draining to the East Stour Water Body in places. Possible requirement for dewatering of excavations and requirement for discharge to surface channels draining to the East Stour Water Body.	In
5.4	HDD and trench crossings for cabling	Direct engineering activity to and beneath channels draining to the East Stour Water Body.	In
5.5	BESS Fire Risk Mitigation Infrastructure	Water tanks for the fire suppression water will require only a minor engineering activity, are not proposed in proximity to surface channels and will be filled by tanker sourced remote from the Site from existing potable supply. There is minimal potential for impacts to water quality or flow.	Out
5.6	Temporary vehicle crossings	Direct engineering activity in proximity to and over the East Stour Water Body.	In
5.7	Equipment and Materials Storage	Temporary usage of land with no significant engineering required and no significant impact on water quality or quantity.	Out
Work No. 6 – Site Access			

Project Component		Description and Justification	Screened in / out
6.1	Site access	No significant engineering works and no impact on water quality or quantity.	Out
Work No. 7 – construction and decommissioning works			
7.1	Primary Construction / Decommissioning Compounds	Temporary usage of land with minor engineering. Potentially polluting uses and activities including welfare facilities, waste storage, storage of fuels and hydrocarbons.	In
7.2	Internal haulage road	The internal haulage road required for construction and decommissioning will be provided using a permeable surface. No below ground excavation works will be undertaken for the internal haulage road and there is minimal potential for impacts to water quality or flow.	Out
Work No. 8 – works to create, enhance and maintain green infrastructure, boundary treatments and crossing structures			
8.1	Temporary vehicle crossings	Direct engineering activity in proximity to and over the East Stour Water Body and channel draining to the East Stour Water Body.	In
8.2	Existing bridges / drain crossings	The use of existing structures will have no significant impact on water quality or quantity. Any future works to upgrade or repair structures will be subject to a separate process of approvals.	Out
8.3	Landscaping and Biodiversity Enhancements	Minor works with no significant impact on water quality or quantity.	Out
Site Wide works			
9.1	Site preparation work	Minor works with no significant impact on water quality or quantity.	Out
9.2	Water and drainage infrastructure	The majority of the proposed drainage infrastructure involves shallow engineering activities in areas set back from surface channels. The system is also designed to	In

Project Component		Description and Justification	Screened in / out
		manage water quantity and quality for other aspects of the scheme. Outfalls for the surface water drainage network to channels draining to the East Stour Water Body will however be required and could involve direct engineering activities to channels.	
9.3	Landscaping and Biodiversity Enhancements	Minor works with no significant impact on water quality or quantity.	Out
9.4	Public rights of way ('PRoW') diversions and establishment of new PRoWs	While the diversion and creation of PRoW will be minor works with no significant impact on water quality or quantity this activity also includes the creation of two new permanent footbridges. These will involve direct engineering activity in proximity to and over channels draining to the East Stour Water Body.	In

4.17 Table 4-2 summarises and compiles the activities that have been screened as 'In' within Table 4-1 and which are therefore taken forward for more detailed consideration in Section 5.0.

Table 4-2: Screening of Project Activities against potential risk to WFD status

Activity	Screening reference number from Table 4-1	Development Phase
Temporary vehicle crossings over the main channel and tributaries	5.6, 8.1	Construction, Operational and Decommissioning
Permanent PRoW crossings over tributaries	9.4	Construction and Operational
HDD crossings beneath the main channel and IDB Managed Ordinary Watercourses	4.2, 5.4	Construction
Trench crossings beneath other Ordinary Watercourses (Riparian Drains)	5.4	Construction
Construction and decommissioning related engineering activities that have the potential to result in polluted surface runoff	2.1, 3.1, 4.1, 5.3	Construction and decommissioning

Activity	Screening reference number from Table 4-1	Development Phase
(project substation, inverter stations, cable trenching),		
Surface water outfall structures for the storm water drainage network	9.2	Construction, operational and decommissioning
Changes in runoff associated with additional impermeable areas	2.1, 3.1	Operational
Discharge of polluted flows via storm drainage systems in the event of a fire.	2.2	Operational
Discharge of polluted flows from, primary construction / decommissioning compounds	7.1	Construction and decommissioning
Piling activities	3.1	Construction

5.0 Stage 2 - WFD scoping

5.1 This section seeks to scope what further assessment work may be required to fully consider the potential impact of activities on WFD water bodies.

5.2 In line with the Planning Inspectorate's Advice Note 18 this WFD scoping includes:

- an initial assessment to identify the risks from the Project to receptors (within the zone of influence) based on the relevant water bodies and their water quality elements; and
- identification of those water bodies where a more detailed impact assessment is required.

5.3 The scoping assessment includes a more detailed review of the WFD water bodies so that linkages and pathways between the activities and the waterbodies can either be confirmed or disproved. Following this, each screened in activity is considered in greater detail with reference to both the confirmed linkages and embedded mitigation incorporated into the Project design as set out in **ES Volume 2, Chapter 10: Water Environment (Doc Ref. 5.2)**.

5.4 Where following this process it is confirmed that there is a viable pathway for impact and it is unclear if the embedded mitigation is sufficient to avoid a significant risk, consideration is given to the scope of further detailed assessment required to assess that risk.

Baseline description of the WFD water bodies

East Stour Water Body (GB107040019640)

5.5 The majority of the Site is located in the hydrological catchment of the East Stour Water Body (GB107040019640). The water body relates to the East Stour River which passes through the Site.

Main Channel

5.6 The East Stour River is classified by the EA as a Main River which flows in a westerly direction to the north and through the Site. Downstream of the Site, the channel flows in a north westerly direction to join the Great Stour River at Ashford. Upstream of the Site, the East Stour River drains a catchment area[11] of approximately 33.68km^2.

5.7 The reach of the East Stour River that flows through the Site is conveyed in a channel circa 12m wide (bank to bank) within a floodplain circa 370m wide. Through the Site, the East Stour River generally flows towards the northern edge of the floodplain along the northern boundary of the Site.

5.8 The main channel of the East Stour River is naturalised in form and meanders along the base of the valley with natural and vegetated banks and bed. The watercourse hydromorphology appears to be relatively natural and a review of historical maps[12] indicates little significant variation in the course of the East Stour within the Site over the last 150 years.

5.9 The only significant 'recent' change to hydromorphology is associated with the construction of Aldington Flood Storage Area ('AFSA') that is designed to impound water during periods of high flow and reduce the downstream flood risk.

5.10 With reference to historic mapping[17], construction of the AFSA appears not to have had any significant impact on the course of the East Stour River downstream of the AFSA.

East Stour River Tributaries

5.11 As illustrated on **ES Volume 3, Figure 10.3: Local Hydrology (Doc Ref 5.3)** there are a number of Ordinary Watercourses which drain north and west through the Site into the East Stour River. The major tributaries are as follows:

- The Bower Road Stream is located approximately 500m northwest of the Site boundary and flows southwest to join the East Stour River; draining an approximate catchment area of 1.04km^2. Bower Road Stream begins on the north side of the HS1 / Network Rail railway line (north of the Site), and is culverted beneath the railway. The channel is approximately 3-4m in width and 1m deep.

- Unnamed Tributary 1 (Pleasuance Dyke, IDB No. 015) rises in Brabourne, 3.7km north of the Site. The channel is approximately 1.3m deep, 7m wide and flows in a south westerly direction towards the Site to discharge into the East Stour River via a culvert beneath the railway line, to the west of Sellindge Substation. Upstream of the Site, the channel drains a catchment area[11] of approximately 8.18km^2 of predominantly arable land and grassland with some rural settlements including Brabourne and Brabourne Lees.

- Unnamed Tributary 2 (Horton Priory Dyke, IDB No. 017) flows in a south westerly direction towards the Site and discharges into the East Stour River via a culvert beneath the railway line immediately east of Sellindge Substation. The channel is approximately 9m wide and 1.3m deep. Upstream of the confluence, Unnamed Tributary 2 drains a catchment area[11] of approximately 13.1km^2 of predominantly grassland and arable land with some smallholdings present throughout.

- Unnamed Tributary 3 (Aldington Dyke, IDB No. 014) rises from a small woodland area (Burch's Rough) approximately 2km south east of the Site and flows in a north westerly direction through the AFSA towards the East Stour River, joining at a confluence approximately 200m downstream of the Mill House impoundment. The channel is approximately 8m wide and 1.1m deep. Unnamed Tributary 3 drains a total catchment area[11] of approximately 4.94km^2 which is predominantly undeveloped arable land, woodland areas and some small farm holdings.

5.12 The majority of these tributary watercourses fall within the jurisdiction of the River Stour (Kent) Internal Drainage Board ('IDB') District. As such, any works on or within the watercourse require consent from the IDB. Details of the River Stour (Kent) IDB area are shown on **Annex C** of **ES Volume 4, Appendix 10.5: Schedule of Watercourse Crossings (Doc Ref. 5.4)**.

5.13 The Ordinary Watercourses within the Site boundary are typically small ditch features dominated by surface water runoff. These drains all discharge into the East Stour River. It is assumed that a number of these ditches were formed naturally (through surface water runoff gullying), however, the majority are sited at field boundaries and therefore were probably excavated and / or straightened to facilitate land drainage and farming across the floodplain.

Activities

5.14 The East Stour River and its tributaries may be directly and indirectly impacted by the Project due to a range of activities during construction, operation and decommissioning phases of the Project. Notably, the East Stour River could potentially be subject to:

- temporary vehicle crossings over the main channel and tributaries;

- HDD crossings beneath the main channel and tributaries;

- permanent PRoW crossings over tributaries;
- Construction and decommissioning related engineering activities that have the potential to result in polluted surface runoff (Project Substation, Inverter Stations, cable trenching);
- Surface water outfall structures for the storm water drainage network;
- Changes in runoff associated with additional impermeable areas; and
- Discharge of polluted flows via storm drainage systems in the event of a fire.

Romney Marsh between Appledore and West Hythe Water – Surface Water Body (GB107040019700)

5.15 Land in the south eastern corner of Field 8 does not drain into the East Stour River and instead drains south towards the Royal Military Canal falling within the Romney Marsh between Appledore and West Hythe Water Body.

5.16 None of the screened in activities will occur within the area of the Site that drains to this water body. As such there will be no direct or indirect impacts during the construction, operation or decommissioning phases. This surface water body is therefore **screened out** of the assessment.

Kent Greensand Eastern - Groundwater Body (GB40701G501400)

5.17 Mapping contained on the catchment data explorer[10] suggests that the Kent Greensand Eastern Water Body covers small areas within the Order limits to the north of the Site within Fields 25 and 26.

Geological and Hydrogeological Description

5.18 The superficial and bedrock geology within the boundary of the Site is shown on **Figure 10.5: Superficial Geology** and **Figure 10.6: Bedrock Geology** in **ES Volume 3 (Doc Ref. 5.3)** respectively.

5.19 This shows that the solid geology underlying the area within which the Site is located comprises a series of sandstone units (including the Hythe Formation) over lying a series of clays (including Weald Clay and Atherton Clay). The more permeable sandstone units are absent in the lower areas along the river valley exposing the deeper less permeable units. Along the base of the river valley the solid geology is overlain by alluvium.

5.20 The Hythe Formation is classified as a 'Principal' aquifer system. These are defined by the EA[13] as "layers of rock or drift deposits that have high intergranular and/or fracture permeability, which usually provide a high level of water storage and therefore may support water supply and/or river base flow on a strategic scale".

5.21 The remaining bedrock types locally are classified as unproductive aquifers which are rocks which have negligible significance for water supply.

5.22 The superficial Alluvium deposits are designated as a 'Secondary A' aquifer, defined as "permeable layers capable of supporting water supplies at a local rather than regional scale, and in some cases form an important source of baseflow to rivers".

5.23 It is anticipated that significant groundwater recharge within the Site is limited to the Hythe Formation. Whilst groundwater flow is possible within the Alluvium deposits, these would be perched above the underlying and impermeable Weald Clay bedrock.

5.24 Groundwater within the Alluvium will be in hydraulic connectivity with the East Stour River with groundwater flows expressed as baseflow.

WFD Water Body

5.25 The Kent Greensand Eastern groundwater body is intended to cover outcrops of the Sandstone units, including the Hythe Formation, that are present to the north of the Site.

5.26 The boundary of the WFD groundwater water body, as shown on the catchment data explorer[10], appears to be based on coarser scale modelling than the 1:50,000 scale BGS mapping presented on **Figure 10.6: Bedrock Geology** in **ES Volume 3 (Doc Ref. 5.3).**

5.27 The more detailed BGS mapping confirms that the outcrop of the Hythe Formation is in fact to the north of the Order limits and the more permeable geology with comprises the Kent Greensand Eastern groundwater water body is in fact not present in that area of the Site.

5.28 It can also be confirmed that the areas where the Hythe Formation do outcrop to the north of the Site are higher than the Site and so surface runoff from the Site cannot drain towards Kent Greensand Eastern groundwater body.

5.29 The other areas on the Site where the Hythe Formation outcrops, to the south and east, are isolated from the main aquifer and are not included within the Kent Greensand Eastern groundwater body.

5.30 The detailed geological mapping confirms that the Kent Greensand Eastern Groundwater Body is not present beneath the Site. The Site topography also means that surface runoff from the Site could not drain to the Kent Greensand Eastern Groundwater Body.

5.31 On this basis there will be no direct or indirect impacts during the construction, operation or decommissioning phases of the Project to the Kent Greensand Eastern Groundwater Body. This groundwater body is therefore **screened out** of the assessment.

Scoping Review of Screened in Activities

5.32 This section reviews the activities screened in at Stage 1 and detailed in Table 4-2 and considers if, given the more detailed review of the WFD water bodies, there are viable pathways for an impact to occur.

5.33 If viable pathways for impact do exist, the mitigation and management measures incorporated into the Project are considered to determine if there could be a significant risk. If it is deemed that a significant risk is possible the scope for supplementary detailed assessment is set out.

Watercourse Crossings

5.34 The location of all of the proposed crossings over the East Stour River is shown in **Annex C** of **ES Volume 4, Appendix 10.5: Schedule of Watercourse Crossings (Doc Ref. 5.4)**. Photographs of the proposed watercourse crossing locations are also provided within that document.

5.35 Further details of the proposed structures are provided below and in **ES Volume 2, Chapter 3 Project Description (Doc Ref 5.2)**.

Temporary vehicle crossings

5.36 To facilitate construction of the Project, temporary bridging of watercourses will be required for construction traffic at five locations:

- Between Field 18 and Field 19;
- Between Field 23 and Field 24;
- Between Field 24 and Field 25;
- Between Field 27 and Field 28; and

- Between Field 27 and Cable Route Corridor.

5.37 Whilst only three of these temporary vehicle crossings are over a designated water body defined by the WFD (the East Stour River), the other two are over tributaries of the water body and therefore taking a precautionary approach, they have been considered in this WFD assessment.

5.38 Clear-span temporary vehicle crossings will be installed during the construction and decommissioning phases using a 'bailey bridge' type system. If needed during operations following a major event (such as an extreme storm that has damaged large areas of PV) temporary vehicle crossings may also be reinstalled in enable access for repairs.

5.39 Pre-fabricated bridge elements will be brought to Site and installed on suitable foundations. On each occasion required it is anticipated that the temporary bridges will be in place for no more than 1 year.

5.40 In line with the **Design Principles (Doc Ref. 7.5)** the soffit of the bridge deck will be set a minimum of 600mm above the top of the bank levels and the abutments set a minimum of 1m from the edge of the bank. The foundations will be designed to ensure the stability of the adjacent bank of the watercourse.

5.41 While design and construction commitments are in place to minimise the risks around the temporary vehicle crossings further review of how likely changes will affect the WFD status of the East Stour Water Body is considered to be warranted.

Permanent PRoW Bridge Crossings

5.42 To accommodate diverted PRoW two new permanent pedestrian crossings will be required:

- Between Field 18 and Field 19; and
- Between Field 23 and Field 24.

5.43 These are over tributaries of the WFD water body and therefore taking a precautionary approach, they have been considered in this WFD assessment.

5.44 It is expected that the new PRoW footbridges will be free standing structures, formed of wooden boards and planks. However, the final design

of the bridges will be subject to detailed design and agreement with the IDB..

5.45 In line with the **Design Principles (Doc Ref. 7.5)** the soffit of the bridge deck will be set a minimum of 600mm above the top of the bank levels and the abutments set a minimum of 1m from the edge of the bank. The foundations will be designed to ensure the stability of the adjacent bank of the watercourse.

5.46 Design and construction commitments are in place to minimise the risks around the permanent PRoW bridge crossings. In addition the detailed design and construction methodology will be subject to separate Land Drainage Consent ('LDC') from the IDB, as set out in the **Schedule of Other Consents and Licences (Doc Ref. 3.4).** In the light of this, and the fact that the structure will be set back from the main channel of the East Stour Water Body, this risk to the WFD status is considered to be very low.

HDD Cable Crossings

5.47 HDD cable crossings of watercourses are required at five locations as follows:

- Between Field 23 and 24 (west);
- Between Field 23 and 24 (east);
- Between Field 24 and 25;
- Between Field 27 and Cable Route Corridor; and
- Between Cable Route Corridor and Sellindge Substation).

5.48 Whilst only three of cable crossings are beneath a designated water body defined by the WFD (the East Stour River), the other two are beneath a tributary of the water body and therefore taking a precautionary approach, they have been considered in this WFD assessment.

5.49 In line with the **Design Principles (Doc Ref. 7.5)** HDD will be used to install the Grid Connection Cable beneath the East Stour River pursuant to Work No. 4, within the areas shown within **ES Volume 4, Appendix 10.5: Schedule of Watercourse Crossings (Doc Ref. 5.4)**. Where the HDD is beneath the East Stour River, a minimum depth of 2m from the bed of the East Stour River will be maintained. In order to achieve this depth, the entry and exit pit locations for HDD will need to be set back at least 10m from top of the bank / channel edge.

5.50 While commitments are in place to minimise the risks around HDD, and HDD is considered to be the most appropriate approach for installing cables, further consideration of the likely HDD methodology is considered to be warranted.

Trench Cable Crossings

5.51 Trenched cable crossings will be required passing beneath one small channel (riparian drain) in three locations.

- Between Field 16 and Field 19;
- Between Field 15 and Field 19; and
- Between Field 18 and Field 19.

5.52 This minor channel is a tributary of the WFD water body and therefore taking a precautionary approach, these crossings have been considered in this WFD assessment.

5.53 The channel where trench cable crossings are proposed is small and is present within the floodplain of the East Stour River acting primarily as a land drainage feature. It has a very limited receiving catchment and as such flows within the channel are typically negligible.

5.54 As detailed in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**, standard trenching techniques will be used for these crossings. This will mean that the channel will be blocked off up and downstream of the crossing location prior to works with over pumping put in place if required.

5.55 The works will be short term and temporary in nature and will need to be subject to separate LDC from the IDB. Adverse impacts are considered unlikely and the risk of impacts to the WFD status East Stour Water Body is considered to be very low.

Discharges

5.56 The only water discharges to the environment associated with the Project will be of rainwater and measures are detailed in the:

- **Outline CEMP (Doc Ref. 7.8)**;
- **Outline Operational Surface Water Drainage Strategy ('Outline OSWDS') (Doc Ref. 7.14)**; and

- **Outline Decommissioning Environmental Management Plan ('Outline DEMP') (Doc Ref. 7.12)**,

to ensure that this water will be suitably controlled and treated prior to discharge during each of the construction, operation and decommissioning phases.

Polluted Construction and Decommissioning Runoff

5.57 As detailed in the **Outline OSWDS (Doc Ref. 7.14)** where possible the final sustainable drainage system will be constructed at the start of the construction period and used to control the quantity and quality of runoff from construction activities.

5.58 The following pollutant control measures for construction related activities are secured through the **Outline CEMP (Doc Ref. 7.8)** and the **Outline DEMP (Dec Ref 7.12)**:

- All water which is pumped from excavations or intercepted from earthworks will be pumped into and through settlement tanks and silt traps prior to discharge to the water environment. Levels of silt accumulation will be checked regularly with accumulated silt removed as required. This will in effect prevent sediment laden runoff entering the water environment resulting in turbidity;

- Surface water flowing into work areas and excavated trenches during the construction period will be pumped via settling tanks or ponds to remove sediment and potential contaminants, before being discharged into local ditches or drains via temporary interceptor drains. Where gradients on Site are significant, trenches will include a hydraulic brake (such as natural clay seals) to reduce flow rates along trenches and hence reduce local erosion; and

- Appropriate measures will be adopted to prevent and control the release of sediment depending on the circumstances and nature of the works. These measures include surface water being directed across vegetated zones, or through mesh fencing, to capture sediment, as appropriate. Alternatives, such as sediment traps or settlement lagoons, may also be considered if the quantity of sediment laden water is anticipated to be large.

5.59 As set out in the **Schedule of Other Consents and Licenses (Doc Ref. 3.4)** if pumped discharges from excavations need to be discharged to an adjacent surface water body, this would only be undertaken subject to receipt of a Water Discharge Activity Permit from the EA.

5.60 These measures will act to minimise pollution in runoff from areas where significant engineering activities are taking place including the construction of the Project Substation, Inverter Stations and the Grid Connection Cable. Any minor changes in the water quality will be short term and temporary and is highly unlikely to affect the WFD status to the East Stour Water Body and as such no further assessment is required.

Changes in runoff associated with additional impermeable areas

5.61 Surface water drainage will be provided for the Project Substation, Inverter Stations and the Intermediate Substation in accordance with the **Outline OSWDS (Doc Ref. 7.14)** and measures will also be provided down gradient of the PV panels to assist in managing runoff from the land.

5.62 The **Outline OSWDS (Doc Ref. 7.14)** takes into account climate change (1 in 100 year plus climate change event) and will ensure that peak rates of surface runoff from these areas are controlled to greenfield rates.

5.63 The SuDS drainage features for the control of storm flows from the Project Substation, Inverter Stations and Intermediate Substations, as described within the **Outline OSWDS (Doc Ref. 7.14)**, are all located outside of the floodplain as demonstrated by mapping contained as **Figure 10.2.7** in the **ES Volume 4, Appendix 10.2: Flood Risk Assessment (Doc Ref. 5.4)**.

5.64 Given the proposed drainage arrangements there should be no uplift in peak rates or volumes of runoff from impermeable areas created as part of the Project and subsequently no risk to the WFD status for the East Stour Water Body. No further assessment of this risk is required.

Discharge of polluted flows via storm drainage systems in the event of a fire

5.65 The **Outline OSWDS (Doc Ref. 7.14)** sets out principles of how polluted water, such as could arise following a fire, would be retained within the platforms of both the Inverter Stations and the Project Substation. Significant storage volumes are provided within the concept design and at the detailed design stage checks will be made to confirm that sufficient storage is provided to contain possible maximum volumes of polluted

water. If determined as necessary through detailed design, the volume of water that could be contained within the platform could readily be increased by raising the bunded height.

5.66 Firewater collected and retained within the affected compound area would be pumped to tanker and removed from Site for treatment and disposal at a suitable licenced facility. Following a fire event, the drainage network will require an assessment to confirm the absence of any contaminants prior to the penstock being released. The Project operator will be responsible for conducting a controlled flushing of the drainage network prior to opening the shut off valve.

5.67 A Requirement in the **Draft DCO (Doc Ref. 3.1)** requires approval of a detailed OSWDS by ABC prior to operation of the authorised development. The above management measures are secured by the **Outline OSWDS (Doc Ref. 7.14)**, the **Outline BSMP (Doc Ref. 7.16)** and the **Outline OMP (Doc Ref. 7.11)**.

5.68 Given the proposed drainage arrangements and operational controls there is no way significant quantities of fire water could be discharged toward the East Stour River or its tributaries and subsequently no risk to the WFD status for the East Stour Water Body. No further assessment of this risk is required.

Discharge of polluted flows from primary construction compounds

5.69 Welfare facilities will be provided on-Site during the construction phase for the expected peak of 199 workers and also during the decommissioning phase. The following measures related to waste water are secured through the **Outline CEMP (Doc Ref. 7.8)** and the **Outline DEMP (Doc Ref 7.12)**:

- All flows from these facilities will be collected and tankered from the Site for treatment and disposal at a suitably licenced facility outwith the Stour catchment;
- Welfare facilities will not be provided in the secondary construction compound that is at risk of flooding (Field 23); and
- All welfare facilities will be sited out of the floodplain and away from watercourses.

5.70 The **Outline CEMP (Doc Ref 7.8)** and the **Outline DEMP (Doc Ref 7.12)** detail arrangements for the storage and handling of potential pollutants.

The documents require that drainage arrangements for construction compounds are determined and agreed prior to construction and decommissioning commencing. These will include measures for the control of pollution and for construction will (in many instances) likely include the early installation of the final SuDS systems proposed within the **Outline OSWDS (Doc Ref. 7.14)**.

5.71 The **Outline CEMP (Doc Ref 7.8)** also requires that pollution incident response plans form part of the detailed CEMP(s) which will identify the type and location of on-Site resources (e.g. spill kits, absorbent materials, oil booms etc.) available for the control of accidental releases of pollution and other environmental incidents.

5.72 Training will be provided to staff in the use of spill kits and briefings will be included within the Site induction highlighting the importance of water quality, the location of watercourses and pollution prevention measures.

5.73 Given the proposed control measures the potential for the discharge of polluted water from the primary construction compounds toward the East Stour River, or its tributaries, is extremely low. Subsequently the risk to the WFD status of the East Stour Water Body is also very low. No further assessment of this risk is required.

Engineering Activities

5.74 The Project will not require direct engineering works to the East Stour River and suitable standoffs from all watercourses have been agreed with the relevant statutory drainage authorities. The only instances where these standoff distances will not be adhered to are for essential factors which are expressly assessed in this report including watercourses crossings over channels, cable crossing beneath channels and surface water outfalls.

Piling activities

5.75 As discussed in **Paragraphs 5.25** to **5.30** the more permeable Hythe Formation does not extend onto the north edge of the Site and the footprint of the Project Substation is wholly underlain by the Weald Clay which has a low permeability.

5.76 Given this the required piling associated with the Project Substation will not be into a unit that is designated by the EA as an unproductive stratum. There is therefore no potential for adverse impact on groundwater associated with this activity and risk to the Kent Greensand Eastern

groundwater body. This activity is therefore screened out from requiring further assessment.

Surface water outfall structures

5.77 As discussed in the **Outline OSWDS (Doc Ref. 7.14)** surface water outfall to the East Stour River will be avoided.

5.78 Outfalls to ordinary watercourses will be set back from the channel and instead, where possible, will have a diffuse outfall via a vegetation buffer, reducing the risk of scour. On this basis the construction and ongoing presence of these surface water outfalls is highly unlikely to give rise to adverse effect that requires consideration in this WFD assessment. The construction and presence of these features is therefore screened out from requiring further assessment.

Scoping Review

5.79 Table 5-1 reviews each of the screened in activities from Table 4-1 in the light of the more detailed understanding of flow pathways around the Site and also the incorporated mitigation and management measures that will be delivered as part of the Project.

Table 5-1: Scoping review of screened in activities

Activity	Water Body	Discussion
Temporary vehicle crossings over the main channel and tributaries	East Stour Water Body - Surface Water Body (GB107040019640)	**Further consideration and assessment required of risk to WFD criteria.**
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	Screened out – no pathway for impact.
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
Permanent PRoW crossings over tributaries	East Stour Water Body - Surface Water Body (GB107040019640)	Design commitments set out in the **Design Principles (Doc Ref 7.5)** and construction methodology detailed in the **Outline CEMP (Doc Ref. 7.8)** mean that significant changes are highly unlikely.

Activity	Water Body	Discussion
		Given this and the separate statutory process for confirming the detailed design and methodology with the IDB it is considered that there is no risk to the WFD status of the East Stour Water Body.
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	Screened out – no pathway for impact.
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
HDD crossings beneath the main channel and IDB Managed Ordinary Watercourses	East Stour Water Body - Surface Water Body (GB107040019640)	**Further consideration and assessment required of risk to WFD criteria.**
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	Screened out – no pathway for impact.
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
Trench crossings beneath other Ordinary Watercourses (Riparian Drains)	East Stour Water Body - Surface Water Body (GB107040019640)	Commitments set out in the **Design Principles (Doc Ref 7.5)** and measures set out in the **Outline CEMP (Doc Ref. 7.8)** mean that significant changes are highly unlikely. Given this and the separate statutory process for confirming the detailed design and methodology with the IDB it is considered that there is no risk to the WFD status of the East Stour Water Body.
	Romney Marsh between Appledore and West Hythe Water Body – Surface	Screened out – no pathway for impact.

Activity	Water Body	Discussion
	Water Body (GB107040019700)	
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
Construction and decommissioning related engineering activities that have the potential to result in polluted surface runoff (Project Substation, Inverter Stations, cable trenching)	East Stour Water Body - Surface Water Body (GB107040019640)	Mitigation and control of potential pollution impacts will be delivered through the implementation of measures detailed in the **Outline CEMP (Doc Ref. 7.8)** and the **Outline DEMP (Dec Ref 7.12).** Given this and the short term and temporary nature of any impacts it is considered that there is no risk to the WFD status of the East Stour Water Body.
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	Higher risk activities are not proposed within areas that drain to this receptor. Given this and the short term and temporary nature of any impacts it is considered that there is no risk to the WFD status of the Romney Marsh between Appledore and West Hythe Water Body.
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
Surface water outfall structures for the storm water drainage network	East Stour Water Body - Surface Water Body (GB107040019640)	As discussed in the **Outline OSWDS (Doc Ref. 7.14)** surface water outfall to the East Stour River will be avoided. Outfalls to ordinary watercourses will be set back from the channel and instead will have a diffuse outfall via a vegetation buffer, reducing the risk of scour.

Activity	Water Body	Discussion
		Given this it is considered that there is no risk to the WFD status of the East Stour Water Body.
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	As discussed in the **Outline OSWDS (Doc Ref. 7.14)** outfalls to ordinary watercourses will be set back from the channel and instead will have a diffuse outfall via a vegetation buffer, reducing the risk of scour. Given this it is considered that there is no risk to the WFD status of the Romney Marsh between Appledore and West Hythe Water Body.
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
Changes in runoff associated with additional impermeable areas	East Stour Water Body - Surface Water Body (GB107040019640)	Measures detailed in the **Outline OSWDS (Doc Ref. 7.14)** will ensure that peak rates and volumes of surface water runoff will be controlled at or below existing greenfield rates. Given this it is considered that there is no risk to the WFD status of the East Stour Water Body.
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	Measures detailed in the **Outline OSWDS (Doc Ref. 7.14)** will ensure that peak rates and volumes of surface water runoff will be controlled at or below existing greenfield rates. Given this it is considered that there is no risk to the WFD status of the Romney Marsh between Appledore and West Hythe Water Body.

Activity	Water Body	Discussion
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
Discharge of polluted flows via storm drainage systems in the event of a fire	East Stour Water Body - Surface Water Body (GB107040019640)	Measures detailed in the **Outline OSWDS (Doc Ref. 7.14)** include for the detection, retention and disposal of polluted water that could arise on the Site in the event of a fire or other major spill. Given this it is considered that there is no risk to the WFD status of the East Stour Water Body.
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	Screened out – no pathway for impact (no BESS located in areas draining to this water body).
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
Discharge of polluted flows from primary construction compounds	East Stour Water Body - Surface Water Body (GB107040019640)	Pollutant control measures secured through the **Outline CEMP (Doc Ref. 7.8)** and the **Outline DEMP (Dec Ref 7.12)** include measures relating to construction compounds such as measures associated with • storage and handling of potential pollutants; • refuelling; • spill management; • storm water management; and • welfare facilities. Given implementation of these measures it is considered that there is no risk to the WFD status of the East Stour Water Body.

Activity	Water Body	Discussion
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	Screened out – no pathway for impact (no construction compounds located in areas draining to this waterbody).
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.
Piling activities	East Stour Water Body - Surface Water Body (GB107040019640)	Screened out – no pathway for impact.
	Romney Marsh between Appledore and West Hythe Water Body – Surface Water Body (GB107040019700)	Screened out – no pathway for impact.
	Kent Greensand Eastern - Groundwater Body (GB40701G501400)	Screened out – no pathway for impact.

5.80 Following the scoping review detailed in Table 5-1, Table 5-2 confirms areas where additional assessment is considered necessary under Stage 3 and the nature of the additional assessment required.

Table 5-2: Scoping review of screened in activities

Activity	Water Body	Further assessment
Temporary vehicle crossings over the main channel and tributaries	East Stour Water Body - Surface Water Body (GB107040019640)	Review of probable impacts against current WFD status and further WFD objectives.
HDD crossings beneath the main channel and IDB Managed Ordinary Watercourses	East Stour Water Body - Surface Water Body (GB107040019640)	Risk assessment in relation to typical HDD methodology to confirm areas of additional investigation and design required. Review of probable impacts against current WFD status and further WFD objectives.

5.81 In email correspondence received on 12 September 2023 the EA confirmed (**Annex C**) that they are in agreement with limiting the scope of the detailed WFD assessment to just the proposed temporary vehicle crossings and the HDD cable crossings. The conclusion of the screening and scoping process set out in Section 4.0 and Section 5.0 of this report is therefore in line with those discussions.

6.0 Stage 3 — WFD Impact Assessment

6.1 This section is a detailed assessment of the water bodies and activities carried forward from the WFD screening and scoping stages.

6.2 In line with the Planning Inspectorate's Advice Note 18 a WFD impact assessment should include:

- Identification of water bodies that are potentially affected (directly or indirectly) or could be at risk as a result of the Project;
- The baseline characteristics of the water bodies concerned;
- A description of the Project and the aspects of the development considered within the scope of the WFD assessment;
- The methods used to determine and quantify the scale of WFD impacts;
- An assessment of the risk of deterioration, as Article 4.7 may apply where is a there is a risk the Project will prevent the achievement of good status or result in deterioration in status;
- An explanation of any mitigation required and how its delivery is secured; and
- An explanation of any enhancements and/or positive contributions to the RBMP objectives proposed and how their delivery would be secured.

6.3 Much of this detail has already been provided in the previous stages of the assessment; however, within this section of the report the following is provided:

- Detail of the current WFD status of the East Stour Water Body;
- Discussion of the likely risks associated with the screened in activities;
- Formal assessment of the risk to WFD status associated with the screened in activities;
- Consideration of the cumulative risks alongside other schemes locally; and

- Enhancements and positive contributions to RBMP objectives.

East Stour Water Body WFD Status Overview

6.4 The designation of the reach of the East Stour River which flows to the north and through the Site as reported on the EA Catchment Data Explorer[10] is summarised in Table 6-1:

Table 6-1: East Stour Water Body Designation

River Basin	Designation
River Basin District	South East
Management Catchment	Stour
Operational Catchment	Stour Upper
Water Body ID	GB107040019640
Water Body Name	East Stour
Hydromorphological Designation	Not designated artificial or heavily modified

6.5 The current overall status for the East Stour Water Body, as reported on the EA Catchment Data Explorer[10], is '*moderate*'. This is based on an assessment of the current Ecological Quality of '*moderate*'.

6.6 An extract from the EA's Catchment Data Explorer[10] summarising all of the supporting elements for the most recent available cycles of assessment (2019 and 2022) is provided in Table 6-2.

Table 6-2: East Stour Water Body Supporting Elements (2019 and 2022)

Classifications

Time period: Cycle 3

Classification Item	2019	2022
Ecological	**Moderate**	**Moderate**
Biological quality elements	**Moderate**	**Moderate**
Fish	**Good**	**Good**
Invertebrates	**Good**	**Good**
Macrophytes and Phytobenthos Combined	**Moderate**	**Moderate**
Macrophytes Sub Element	**Moderate**	**Moderate**
Phytobenthos Sub Element	**Moderate**	**Moderate**
Physico-chemical quality elements	**Moderate**	**Moderate**
Ammonia (Phys-Chem)	**High**	**High**
Dissolved oxygen	**Good**	**Good**
Phosphate	**Moderate**	**Moderate**
Temperature	**High**	**High**
pH	**High**	**High**
Hydromorphological Supporting Elements	**Supports good**	**Supports good**
Hydrological Regime	**Supports good**	**Supports good**
Morphology	**Supports good**	**Supports good**
Chemical	**Fail**	**Does not require assessment**
Priority hazardous substances	**Fail**	**Does not require assessment**
Benzo(a)pyrene	**Good**	
Dioxins and dioxin-like compounds	**Good**	
Heptachlor and cis-Heptachlor epoxide	**Good**	
Hexabromocyclododecane (HBCDD)	**Good**	
Hexachlorobenzene	**Good**	
Hexachlorobutadiene	**Good**	
Mercury and Its Compounds	**Fail**	
Perfluorooctane sulphonate (PFOS)	**Good**	
Polybrominated diphenyl ethers (PBDE)	**Fail**	
Priority substances	**Good**	**Does not require assessment**
Cypermethrin (Priority)	**Good**	
Fluoranthene	**Good**	
Other Pollutants	**Does not require assessment**	**Does not require assessment**

Why do all water bodies have a chemical status of fail?

Ecological and Chemical Status

6.7 The '*moderate*' Ecological Status is a function of '*good*' status reported for Fish and Invertebrates, and '*moderate*' status for Macrophytes and Phytobenthos.

6.8 During the 2022 classification cycle, it was reported that the Chemical Quality no longer requires assessment and therefore is no longer assessed by the EA. The 2019 cycle indicates that the River Stour '*failed*' on its Chemical Status due to the detection of Priority Hazardous Substances.

These included Mercury and its compounds and Polybrominated diphenyl ethers. All other chemical elements assessed were considered to be of '*good*' status.

6.9 The EA have yet to identify a category or sector which led to the failure on these specific elements but state in the Catchment Data Explorer[10] that measures are in place to address the reason for this failure and are waiting for the river to recover.

6.10 There are no specific '*measures*' identified for this water body published on the Catchment Data Explorer.

Hydromorphology

6.11 The South East River Basin District RBMP[9] indicates that the watercourse is not considered artificial, or heavily modified.

Review of Potential Risks

6.12 As set out in Table 5-1 and Table 5-2 further consideration is required to review the potential risks to the East Stour Water Body (including the East Stour River and its tributaries). These risks could arise from:

- Erection, use and removal of temporary vehicle crossings (which will occur separately in both the construction and decommissioning phases and may also be required in the operation phase); and
- Construction, presence and decommissioning of HDD cable crossings.

6.13 Conceptually broad categories of risks could include:

- Deterioration in water quality and hydrological regime impacting both the biological and chemical elements. This could occur from construction activities in proximity to the channel or from a blowout during the HDD drilling process;
- Physical disruptions to flow may result in changes to hydromorphology; and
- Shadowing of watercourses and encroachment into riparian corridors resulting in a reduction in biodiversity and riparian habitat.

Temporary vehicle crossings

6.14 For the temporary vehicle crossings the most significant potential risks are:

- Contaminated storm water runoff discharging from the areas of construction work adjacent to the channel during the erection and

removal of the structures. In particular turbid / sediment laden runoff which could smother the riverbed impacting aquatic habitat.

- Physical disturbances to the riverbed and bank during the erection and removal of the structure. This would include any damage to riparian and in channel habitats and in the event of damage to riparian vegetation could also result in an increased potential for erosion.
- Loss of vegetation and habitat in the riparian zone to accommodate the structure.
- Shadowing of the channel beneath the structure for the limited period (12 months) the temporary bridges are in place.

6.15 As the temporary vehicle crossings will be required in the construction and decommissioning phase and may also be required in the operation phase, these impacts (if not adequately controlled) could occur during any stage of the Project.

HDD Cable Crossing

6.16 For the HDD cable crossings the most significant potential impact is a potential 'blow out' of the drilling mud into the watercourse resulting in impacts to water quality, the biological health of the watercourse and smothering of channel bed habitat. This impact could only occur during the construction phase.

6.17 A preliminary HDD drilling risk assessment has been undertaken to consider this risk against the likely drilling methodology. This is provided in **Annex B**. This assessment is only preliminary as it is undertaken prior to detailed intrusive investigations which will guide the final choice of HDD drilling methodology. Due to its preliminary nature the risk assessment flags potential concerns and issue that could arise but which will in reality be addressed through the detailed design and final choice of methodology. Final details of the HDD methodology will be checked and approved by the EA as part of the FRAP process.

6.18 A number of the potential risks detailed within **Annex B** (HDD designer risk assessment) are rated as medium after mitigation. This is mostly because of the nature of the risk assessment matrix that has been applied. With this particular matrix, a severe potential impact can only ever be ranked a 'high' or 'medium' risk irrespective of how unlikely the associated event may be. In many instances this can be misleading as the probability of the impact

occurring once the HDD operation is fully designed and managed should be negligible.

6.19 The medium risk impacts relate to below ground aspects of the work, such as the risk of a breakout event or conflict with unknown services. As set out in the **Outline CEMP (Doc Ref. 7.8)**, management measures for controlling these risks will be fully defined within the detailed CEMP(s) after site investigations are undertaken. Control measures such as continual monitoring of the watercourse and measures to contain and treat any pollution will then be agreed and implemented.

6.20 As a result, these 'medium' risk impacts within the draft HDD risk assessment will be managed and controlled such that the potential effects are all 'not significant' in EIA terms or in terms of this WFD Assessment.

6.21 During the operational and decommissioning phases there are little or no potential risks arising from the cable crossings as the presence and pulling out of the cables should have no effect.

6.22 Further discussion on the nature of potential impacts to the water environment is provided within **Section 10.7** of **ES Volume 2, Chapter 10: Water Environment (Doc Ref 5.2)**.

Assessment of the Project against WFD Quality Elements

6.23 Table 6-3 assesses the potential risks associated with the installation, operation and decommissioning of temporary bridge bridges over the East Stour River and its tributaries. The assessment is limited to the East Stour Water Body.

6.24 The installation, operation and decommissioning of temporary vehicle crossings will be required during both the construction and decommissioning phases of the Project to access areas of the Site. Temporary bridges may similarly be required during the operation phase if significant damage occurs to a large area of PV arrays and vehicular access to these areas is needed. On each occasion required the structures, methodology and controls will be identical and so the potential impacts associated with temporary vehicle crossings during all three phases are considered together.

6.25 Table 6-4 assesses the installation, presence and decommissioning of cables (installed by HDD) beneath the East Stour River and its tributaries. The assessment is limited to the East Stour Water Body and takes account

of the embedded mitigation as detailed in the **Design Principles (Doc Ref. 7.5)**, and discussed more fully in **ES Volume 2, Chapter 10: Water Environment (Doc Ref. 5.2)**.

6.26 The installation of the temporary vehicle crossings and the HDD cable crossings will require a FRAP if on or under the East River Stour. LDC from the IDB will be required where the works are on or under an Ordinary Watercourse.

6.27 The FRAPs and LDC applications will be supported by detailed CEMPs and Method Statements. Permits would not be issued if the EA (for Main River) and IDB (for Ordinary Watercourses) considered that the works would have any adverse impact on the water environment.

Table 6-3: Assessment of Temporary Vehicle Crossings on WFD Quality Elements – Surface Water (all phases)

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
Current Ecological Status — ***Moderate***					
Ecological					
Deterioration in water quality and hydrological regime.	**Biological Elements**				Potential risks will be mitigated through the design of the bridges (free span and set back of abutments from channel – secured through the **Design Principles (Doc Ref. 7.5)**) and also measures to prevent potentially silt laden surface water runoff and/or potential contaminants reaching the watercourse during the installation of the bridge foundation and abutments. Discharge from the works areas will therefore be drained to the watercourse via suitable sediment / silt traps. Similar mitigation measures will be employed for the removal of the
	Fish	Good	Good	Not significant	
	Invertebrates	Good	Good	Not significant	
	Macrophytes and Phytobenthos combined	Moderate	Good	Not significant	
	Physio-Chemical Quality Elements				
	Ammonia (Phys-Chem)	High	Good	Not significant	
	Dissolved Oxygen	Good	Good	Not significant	
	Phosphate	Moderate	Good	Not significant	

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
	Temperature	High	Good	Not significant	temporary bridges and foundations as required for their installation. Relevant mitigation measures discussed are secured through the **Outline CEMP (Doc Ref. 7.8)**, **Outline OMP (Doc Ref 7.11)** and **Outline DEMP (Doc Ref 7.12)**. Potential risks to biological elements are assessed to be low and short term limited to the period over which the temporary crossing is required.
	pH	High	Good	Not significant	
	Hydromorphological Supporting Elements				
	Hydrological Regime	Supports Good	Supports Good	Not significant	
	Morphology	Supports Good	Supports Good	Not significant	
Physical disruptions to flow may result in changes to hydromorphology.	**Biological Elements**				The **Design Principles (Doc Ref. 7.5)** include measures to ensure temporary vehicle crossings are designed and installed in a way which avoids impacts to the channel and minimises on-site engineering. Bridge soffits will be set at least 600mm above the adjacent bank level and there would be no in-channel structures as bridge supports will be set back at least 1m from the edge of the bank.
	Fish	Good	Good	Not significant	
	Invertebrates	Good	Good	Not significant	
	Macrophytes and Phytobenthos combined	Moderate	Good	Not significant	
	Physio-Chemical Quality Elements				

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
	Ammonia (Phys-Chem)	High	Good	Not significant	The design of bridge abutments will be informed by a site-specific site investigation to ensure there will be no impacts on the stability of the adjacent watercourse bank. Therefore, there will be no disruption to flow in the watercourse. Potential risks to biological elements are assessed to be low and short term, limited to the period over which the temporary crossing is required.
	Dissolved Oxygen	Good	Good	Not significant	
	Phosphate	Moderate	Good	Not significant	
	Temperature	High	Good	Not significant	
	pH	High	Good	Not significant	
	Hydromorphological Supporting Elements				
	Hydrological Regime	Supports Good	Supports Good	Not significant	
	Morphology	Supports Good	Supports Good	Not significant	
Shadowing of watercourses and encroachment into riparian corridors resulting	**Biological Elements**				Impacts arising from watercourse shadowing are not considered significant as the bridges will only impact very short reaches and are only temporary to facilitate construction and
	Fish	Good	Good	Not significant	
	Invertebrates	Good	Good	Not significant	

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
in a reduction in biodiversity and riparian habitat.	Macrophytes and Phytobenthos combined	Moderate	Good	Not significant	decommissioning of the Project (and only if required during the operational phase). It is anticipated they will be in place for no more than one year on each occasion. The **Design Principles (Doc Ref. 7.5)** secure that the soffit of bridge decks will be set a minimum of 600mm above the bank level and the abutments set 1m back from the top of the bank. The loss of riparian habitat will therefore be minimal and temporary. Upon removal of the temporary bridge and abutments, the area will be restored.
	Physio-Chemical Quality Elements				
	Ammonia (Phys-Chem)	High	Good	Not significant	
	Dissolved Oxygen	Good	Good	Not significant	
	Phosphate	Moderate	Good	Not significant	
	Temperature	High	Good	Not significant	
	pH	High	Good	Not significant	
	Hydromorphological Supporting Elements				
	Hydrological Regime	Supports Good	Supports Good	Not significant	
	Morphology	Supports Good	Supports Good	Not significant	

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
Chemical					
Deterioration in water quality and in the hydrological regime.	Priority Hazardous Substances	Does not require assessment	Good	Not significant	Mitigation of potential effects will require measures to prevent potential contaminants reaching the watercourse during the installation of the bridge foundation and abutments. Discharge from the works areas will therefore be drained to the watercourse via suitable sediment / silt traps. During the temporary operational phase, runoff from the bridge deck and approach track / ramps will be drained to the watercourse via suitable sediment / silt traps. Similar mitigation measures will be employed for the removal of the temporary bridges and foundations as required for their installation. Relevant mitigation measures discussed are secured through the **Outline CEMP (Doc Ref. 7.8)**, **Outline**
	Priority Substances	Does not require assessment	Good	Not significant	
	Other Pollutants	Does not require assessment	Does not require assessment	Not significant	

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
					OMP (Doc Ref 7.11) and **Outline DEMP (Doc Ref 7.12)**. Potential risks to chemical elements are short term limited to the period over which the temporary crossing is required.

Table 6-4: Assessment of HDD on WFD Quality Elements – Surface Water

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
Current Ecological Status - ***Moderate***					
Ecological					
Deterioration in water quality and hydrological regime.	**Biological Elements**				Mitigation of potential effects during the construction and decommissioning phases of the Project will require measures to prevent potentially silt laden surface water runoff and/or
	Fish	Good	Good	Not significant	
	Invertebrates	Good	Good	Not significant	

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
	Macrophytes and Phytobenthos combined	Moderate	Good	Not significant	potential contaminants reaching the watercourse during the installation of the crossings. Discharge from the works areas will therefore be drained to the watercourse via suitable sediment / silt traps. Relevant mitigation measures discussed are secured through the **Outline CEMP (Doc Ref. 7.8).** A particular risk arises during the construction phase from the potential 'blow out' of the drilling mud into the watercourse, however, the risks will be minimised by designing the vertical alignment of the bore with reference to a site-specific site investigation. A preliminary HDD risk assessment is enclosed at **Annex B** of this report and this clarifies the key concerns which will then be addressed through intrusive investigation and detailed design. During the operational phase, the presence of the cable at depth (>2m)
	Physio-Chemical Quality Elements				
	Ammonia (Phys-Chem)	High	Good	Not significant	
	Dissolved Oxygen	Good	Good	Not significant	
	Phosphate	Moderate	Good	Not significant	
	Temperature	High	Good	Not significant	
	pH	High	Good	Not significant	
	Hydromorphological Supporting Elements				
	Hydrological Regime	Supports Good	Supports Good	Not significant	
	Morphology	Supports Good	Supports Good	Not significant	

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
					beneath the channel will have no impact. This is secured through the **Design Principles (Doc Ref. 7.5).** During the decommissioning phase, the activity of pulling the cable out will have no impact. Potential risks to biological elements are assessed to be low and short term, limited to the period for installation of the cable crossings.
Physical disruptions to flow may result in changes to hydromorphology.	**Biological Elements**				The **Design Principles (Doc Ref. 7.5)** secure that launch and reception pits will be set back at least 10m from the top of the bank / channel edge. Their excavation will therefore have no impact on the stability of the channel. The activity of HDD drilling (construction phase), the presence of the cable (operational phase) and its removal by pulling (decommissioning phase) from a depth of >2m below the channel bed will have no impact on flow or hydromorphology.
	Fish	Good	Good	Not significant	
	Invertebrates	Good	Good	Not significant	
	Macrophytes and Phytobenthos combined	Moderate	Good	Not significant	
	Physio-Chemical Quality Elements				
	Ammonia (Phys-Chem)	High	Good	Not significant	

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
	Dissolved Oxygen	Good	Good	Not significant	During the construction phase, a minor risk arises from the potential 'blow out' of the drilling mud into the watercourse, however, the risks will be minimised by designing the vertical alignment of the bore with reference to a site-specific site investigation. A preliminary HDD risk assessment is enclosed at **Annex B** of this report. Potential risks to biological elements are assessed to be low and short term, limited to the period for installation of the cable crossings.
	Phosphate	Moderate	Good	Not significant	
	Temperature	High	Good	Not significant	
	pH	High	Good	Not significant	
	Hydromorphological Supporting Elements				
	Hydrological Regime	Supports Good	Supports Good	Not significant	
	Morphology	Supports Good	Supports Good	Not significant	
Shadowing of watercourses and encroachment into riparian corridors resulting in a reduction in biodiversity and riparian habitat.	**Biological Elements**				The **Design Principles (Doc Ref. 7.5)** secure that launch and reception pits will be set back at least 10m from the top of the bank / channel edge. Their excavation will therefore have no impact on the riparian corridor. Potential risks to biological elements are restricted to disturbance to
	Fish	Good	Good	Not significant	
	Invertebrates	Good	Good	Not significant	
	Macrophytes and Phytobenthos combined	Moderate	Good	Not significant	

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
	Physio-Chemical Quality Elements				vegetation / ecology caused by construction workers. This would be short term, limited to the period for installation (construction phase) and removal (decommissioning) of the cable crossings.
	Ammonia (Phys-Chem)	High	Good	Not significant	
	Dissolved Oxygen	Good	Good	Not significant	
	Phosphate	Moderate	Good	Not significant	
	Temperature	High	Good	Not significant	
	pH	High	Good	Not significant	
	Hydromorphological Supporting Elements				
	Hydrological Regime	Supports Good	Supports Good	Not significant	
	Morphology	Supports Good	Supports Good	Not significant	
Chemical					
Deterioration in water quality and in the	Priority Hazardous Substances	Does not require assessment	Good	Not significant	A particular risk arises to water quality of the East Stour River during the construction phase from the potential

Potential Causal Link	WFD Parameters	Current Status (2022)	Objective Status (2015, 2027, 2040, 2063)	Likelihood of Significant Effect due to Project	Proposed Mitigation and Assessment
hydrological regime.	Priority Substances	Does not require assessment	Good	Not significant	'blow out' of the drilling mud into the watercourse. However, the risks will be minimised by designing the vertical alignment of the bore with reference to a site-specific site investigation. A preliminary HDD risk assessment is enclosed at **Annex B** of this report. During the operational phase, the presence of the cable at depth (>2m) beneath the channel will have no impact on water quality. During the decommissioning phase, the activity of pulling the cable out will have no impact on water quality. Appropriate mitigation measures are secured through the **Outline DEMP (Doc Ref. 7.12).** Potential impacts to chemical elements are short term limited to the period for installation of the cable crossings during the construction phase. No risks to chemical elements are expected in the operation or decommissioning phases.
	Other Pollutants	Does not require assessment	Does not require assessment	Not significant	

Assessment against WFD Objectives

6.28 The detailed assessment set out in Table 6-3 and Table 6-4 confirms that the embedded mitigation will be sufficient to prevent the Project causing or contributing to deterioration in the WFD status of the East Stour Water Body during the construction, operation and decommissioning phases.

6.29 The assessment also confirms that the temporary vehicular watercourse crossings and the HDD cable crossings will not prevent or contribute to preventing the water body reaching good status.

Cumulative Impacts

6.30 A full review of other projects locally that could give rise to cumulative impacts to the East River Stour is set out in **ES Volume 2, Chapter 10: Water Environment (Doc Ref. 5.2)**. This concluded that only two other projects required further consideration. These are the East Stour Solar Farm (ID No. 9) and Otterpool Park Development (ID No. 10).

6.31 With appropriate controls and methodology there will be no significant risk to the WFD status of the East Stour Water Body arising from HDD drilling at depth beneath the channel of the East Stour River and its tributaries (construction phase). Similarly there will be no risk to the WFD status of the East Stour Water Body arising from the presence of the cable at a depth of 2m or greater beneath the channels during the operational phase or for their removal during decommissioning.

6.32 Similarly, this assessment concludes that with appropriate controls and methodology there will be no significant risk to the WFD status of the East Stour Water Body arising from arising from the erection, use and removal of temporary vehicle crossings across the East River Stour and its tributaries (all phases).

6.33 Given the absence of any significant risk associated with either the HDD cable crossings or the temporary vehicle crossings there can be no cumulative impact between those activities / features and activities associated with the East Stour Solar Farm (ID No. 9) and Otterpool Park Development (ID No. 10).

6.34 No cumulative impacts have been identified that might lead to deterioration in status of the surface water and groundwater waterbodies.

Enhancements and Positive Contributions to RBMP Objectives

6.35 The reasons why the East Stour Water Body current fails to meet good status relate principally to diffuse pollution sources (agricultural and urban runoff) and point sources (sewage discharge) within the catchment.

6.36 There are two families of compounds, '*Polybrominated diphenyl ethers*' and '*Mercury and its compounds'*, that are responsible for the failure to meet '*good*' chemical status in the 2019 assessment.

6.37 The area of the site is not a source area for '*Polybrominated diphenyl ethers*' or '*Mercury and its compounds'*. As such there is clearly no opportunity through the construction, operation or decommissioning of the Project to address that specific reasons why the water body has not achieved '*good*' biological or chemical status.

6.38 The Site is currently used as agricultural farmland and any pesticides or fertilisers used on the land will contribute to the diffuse pollution observed with the East Stour River. This is one of the reasons why the East Stour Water Body current fails to meet good status. Following development of the solar farm, pesticides and fertilisers will not be used on the land through the 40 year operational life of the Project. As such the development will contribute to addressing that reason for the East Stour Water Body failing to meet good status.

6.39 Wider opportunities exist, and are being taken, within the scope of the Project to deliver targeted improvement along the East Stour River. These primarily relate to the landscape treatment and are shown on the **Illustrative Landscape Drawings (Doc Ref. 2.7)**. While positive, these are unlikely to have any impact on WFD status of the waterbody.

7.0 Summary and Conclusions

7.1 A screening assessment has been undertaken in relation to the Project to identify relevant WFD water bodies and activities associated with the Project that could in concept affect these.

7.2 The water bodies identified within the study area, extending to 1km from the Order limits, are limited to:

- the East Stour Water Body - surface water GB107040019640);
- the Romney Marsh between Appledore and West Hythe Water Body – surface water (GB107040019700); and
- the Kent Greensand Eastern Water Body – groundwater (GB40701G501400).

7.3 Potential activities associated with the Project were screened to identify those that could theoretically pose a risk to WFD water bodies. Prior to detailed consideration of linkages and pathways, and also embedded mitigation, relevant activities identified by this initial screening process were:

- Temporary vehicle crossings over the main channel and tributaries;
- Permanent PRoW crossings over tributaries;
- HDD crossings beneath the main channel and IDB Managed Ordinary Watercourses;
- Trench crossings beneath other Ordinary Watercourses (Riparian Drains);
- Construction and decommissioning related engineering activities that have the potential to result in polluted surface runoff (Project Substation, Inverter Stations, cable trenching);
- Surface water outfall structures for the storm water drainage network;
- Changes in runoff associated with additional impermeable areas;
- Discharge of polluted flows via storm drainage systems in the event of a fire;
- Discharge of polluted flows from primary construction compounds; and
- Piling activities.

7.4 Following a detailed baseline review it was determined that:

- none of the potentially relevant activities associated with the Project will occur within areas that drain to the Romney Marsh between Appledore and West Hythe Water Body;
- the geological strata covered by Kent Greensand Eastern Water Body only outcrops outside and to the north of the Order limits and this stratum is not present at depth beneath the Site; and
- no land within the Order limits slopes towards areas where the geological stratum covered by the Kent Greensand Eastern Water Body is present. As such storm water runoff or other discharges from potentially relevant activities associated with the Project could not drain to and recharge that aquifer.

7.5 On this basis there will be no direct or indirect impacts during the construction, operation or decommissioning phases of the Project to either the Romney Marsh between Appledore and West Hythe Water Body or the Kent Greensand Eastern Groundwater Body. These water bodies are therefore screened out from requiring further assessment.

7.6 Embedded mitigation relevant to the water environment is set out in the **Design Principles (Doc Ref 7.5)**, the **Outline OSWDS (Doc Ref. 7.14)**, the **Outline BSMP (Doc Ref. 7.16)**, the **Outline CEMP (Doc Ref. 7.8)**, the **Outline OMP (Doc Ref. 7.11)** and the **Outline DEMP (Dec Ref 7.12)**. These measures are summarised in **ES Volume 2, Chapter 10: Water Environment (Doc Ref. 5.2)**.

7.7 Following a review of the potentially relevant activities in the light of embedded mitigation as outlined within the documents listed above it was determined that the majority of these do not pose a risk to the WFD status of the East Stour Water Body and no further assessment is required. The potential impacts of the temporary bridging of the East Stour River and its tributaries, and the installation of cables beneath the East Stour River and its tributaries respectively on the East Stour River Water Body do however warrant detailed assessment.

7.8 In email correspondence received on 12 September 2023 the EA confirmed (**Annex C**) that they were in agreement with limiting the scope of the detailed WFD assessment to just the proposed temporary vehicle crossings and the HDD cable crossings.

Temporary vehicle crossings

7.9 The detailed (Stage 3) assessment concludes that given committed mitigation the erection and removal of temporary vehicle crossings will not directly or indirectly affect the ecological and chemical elements of the WFD status for the East Stour Water Body.

7.10 The shading of the water body and riparian margin by the deck of temporary vehicle crossings would similarly not pose a significant risk as the bridges would only affect a small section of channel and would be in place for no more than a year on each occasion they are required.

HDD Cable Crossing

7.11 The detailed (Stage 3) assessment concludes that that given committed mitigation relating to depth of drilling and stand off from the watercourse, and also given appropriate detailed design informed by intrusive investigation the construction HDD cable crossings will not directly or indirectly affect ecological and chemical elements of the WFD status for the East Stour Water Body.

Cumulative Impacts

7.12 No cumulative impacts have been identified that might lead to deterioration in status of the local WFD water bodies.

Designated Sites

7.13 The East Stour River is a tributary of the Great Stour that flows through the Stodmarsh designated site. However, as the designated site is circa 30km downstream of the Site, and with the mitigation measures in place, the proposed temporary bridging of the East Stour River and its tributaries and the installation of cables beneath the East Stour River and its tributaries respectively will have no likely significant effect.

Risk of Preventing Improvement

7.14 There are currently no specific '*measures*' or '*opportunities*' identified by the Environment Agency within the Catchment Data Explorer[10] to achieve '*good*' ecological and chemical status for the East Stour River Water Body.

Enhancement and Positive Contributions

7.15 No opportunities have been identified to improve the East Stour River Water Body's WFD status as part of the proposed temporary bridging of the

East Stour River and its tributaries and the installation of cables beneath the East Stour River and its tributaries respectively.

7.16 The change of use of the Site from agriculture to a solar farm will inherently reduce the diffuse pollution due to reduction in the use of fertilisers and pesticides. Wider opportunities will also be taken through the implementation of the Project to improve the riparian corridor along the East River Stour through targeted landscape improvements.

Conclusion

7.17 Risks to WFD water bodies posed by activities associated with the Project will be managed through the implementation of measures contained in the **Design Principles (Doc Ref 7.5)**, the **Outline OSWDS (Doc Ref. 7.14)**, the **Outline BSMP (Doc Ref. 7.16)**, the **Outline CEMP (Doc Ref. 7.8)**, the **Outline OMP (Doc Ref. 7.11)** and the **Outline DEMP (Dec Ref 7.12)**. These measures are summarised in **ES Volume 2, Chapter 10: Water Environment (Doc Ref. 5.2)**.

7.18 Given these measures it is concluded that the proposed temporary bridging of the East Stour River and its tributaries and the installation of cables beneath the East Stour River and its tributaries respectively:

- will not lead to deterioration in the status of the East Stour River Water Body;
- will not render proposed improvement measures ineffective; and
- will not otherwise prevent the East Stour Water Body reaching good status.

7.19 The Project will also not prevent the achievement of the wider WFD objectives as set out in the South East RBMP and is not predicted to have an impact on any other water body or mitigation measures developed to achieve their Good status.

7.20 It is therefore concluded that the Project will not be contrary to the Directive. Given this conclusion there is no requirement for derogation in the context of Article 4.7 of the WFD.

Annex A Hydrological Walkover Survey

Appendix 10.3 - Water Framework Directive Assessment

Stonestreet Green Solar

EPL 001 Limited

SLR Project No.: 425.064837.00001

28 May 2024

Appendix 10.3 Annex A – SLR Hydrological Walkover Survey

SLR undertook a hydrological walkover survey between 24th July 2023 and 25th July 2023 to observe on site hydrological features along the East Stour River corridor. The weather was cloudy and dry on the 24th July and sunny and dry on the 25th July. All photos were taken using the internal camera and lens on a Samsung Galaxy A33 5G smartphone. Photographs were taken of any key hydrological features along the East Stour River corridor and the photo locations are shown in Figure 10.3.1.

Further surveys were undertaken in January and February 2024 looking at specific structures that will be used and locations where hydrological features will be directly impacted by the Project (See **ES Volume 4, Appendix 10.5: Schedule of Watercourse Crossings (Doc Ref. 5.4)).**

604000 605000 606000 607000 608000

139000 138000 137000

425.064837.00001.0253.0 Survey Location Plan

N

LEGEND

Order limits

Survey Location

APFP Regulation: 5(2)(o)

Quod

SLR

STONESTREET GREEN SOLAR

ANNEX A APPENDIX 10.3
HYDROLOGICAL WALKOVER SURVEY

SURVEY LOCATION PLAN

Figure 10.3.1

Scale	Date
1:15,000 @ A3	APRIL 2024

0 0.5 1 1.5

Kilometres

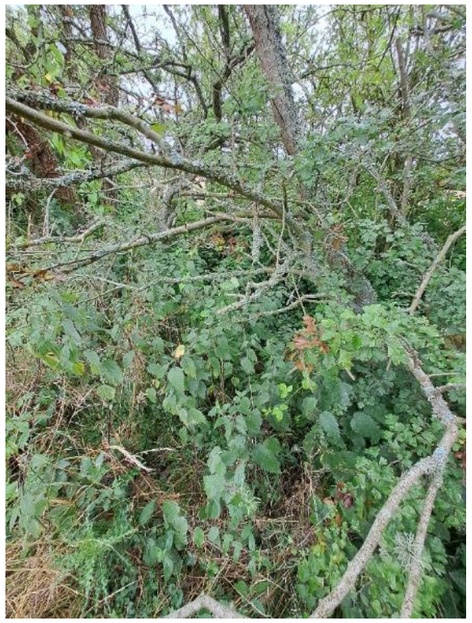
Photo 1: CH_Lane_P1 (25 July 2023)	Photo 2: CH_Lane_P2 (25 July 2023)	Photo 3: CULV1_D_P1 (25 July 2023)
		
Photo 4: CULV1_D_P2 (24 July 2023)	**Photo 5: CULV2_D_P1 (25 July 2023)**	**Photo 6: DITCH_P1 (24 July 2023)**
		

Photo 7: DITCH_P2 (24 July 2023)	Photo 8: ES_001_P1 (25 July 2023)	Photo 9: ES_002_P1 (25 July 2023)

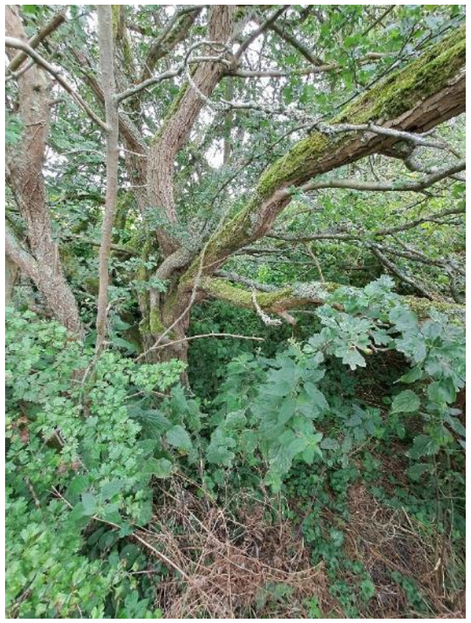



Photo 10: ES_002_P2 (25 July 2023)	**Photo 11: ES_002_P3 (25 July 2023)**	**Photo 12: ES_003_P1 (25 July 2023)**
		

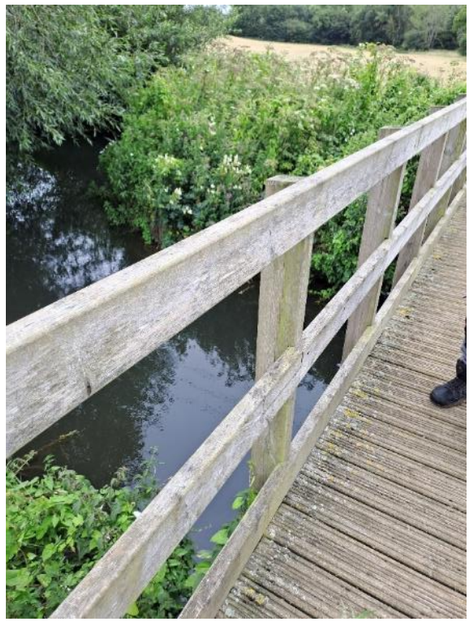
Photo 13: ES_003_P2 (25 July 2023)	Photo 14: ES_004_P1 (24 July 2023)	Photo 15: ES_004_P2 (24 July 2023)
		
Photo 16: ES_004_P3 (24 July 2023)	**Photo 17: ES_005_P1 (24 July 2023)**	**Photo 18: ES_005_P2 (24 July 2023)**
		

Photo 19: ES_005_P3 (24 July 2023)	Photo 20: ES_005_P4 (24 July 2023)	Photo 21: ES_006_P1 (24 July 2023)

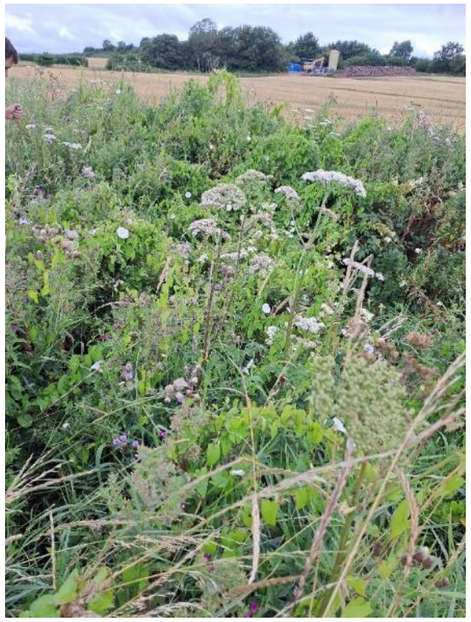
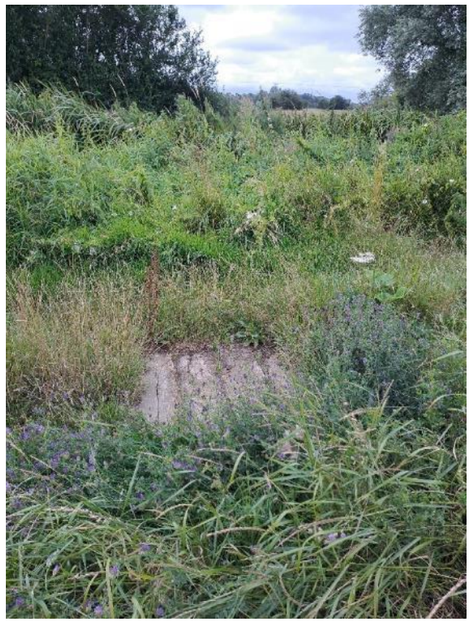

	

Photo 22: ES_006_P2 (24 July 2023)	**Photo 23: ES_006_P3 (24 July 2023)**	**Photo 24: ES_006_P4 (24 July 2023)**
		

Photo 25: ES_006_P5 (24 July 2023)	Photo 26: ES_006-007_P1 (24 July 2023)	Photo 27: ES_006-007_P2 (24 July 2023)
		
Photo 28: ES_006-007_P3 (24 July 2023)	**Photo 29: ES_007_P1 (24 July 2023)**	**Photo 30: ES_008_P1 (24 July 2023)**
		

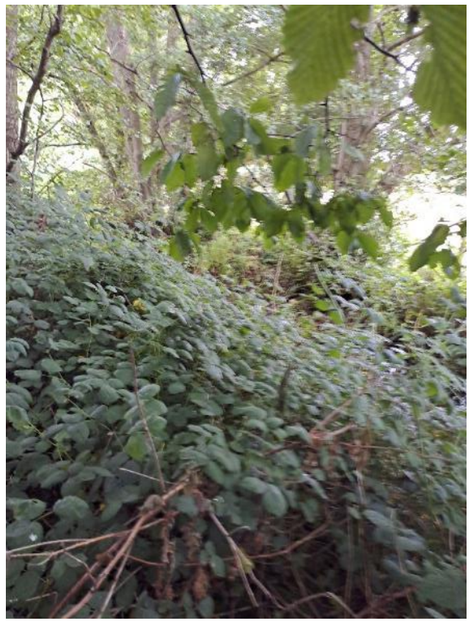
Photo 31: ES_008_P2 (24 July 2023)	Photo 32: ES_008-009_P1 (24 July 2023)	Photo 33: ES_009_P1 (24 July 2023)
		
Photo 34: ES_009_P2 (24 July 2023)	**Photo 35: ES_011_P1 (24 July 2023)**	**Photo 36: ES_011_P2 (24 July 2023)**
		

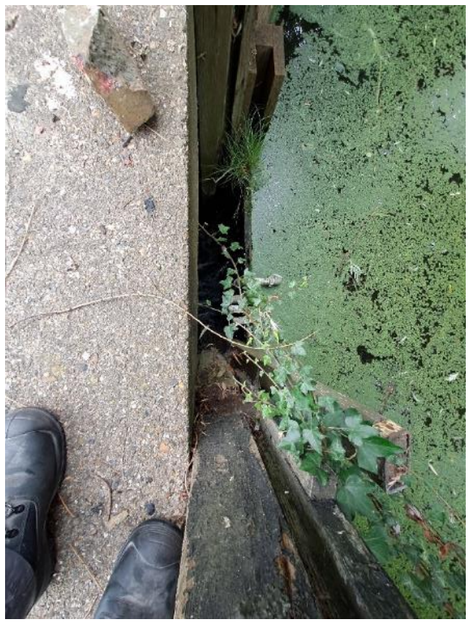
Photo 37: ES_011_P3 (24 July 2023)	Photo 38: ES_011_P4 (24 July 2023)	Photo 39: ES_011_P5 (24 July 2023)
		
Photo 40: ES_011_P6 (24 July 2023)	**Photo 41: ES_011_P7 (24 July 2023)**	**Photo 42: ES_011_P8 (25 July 2023)**
		

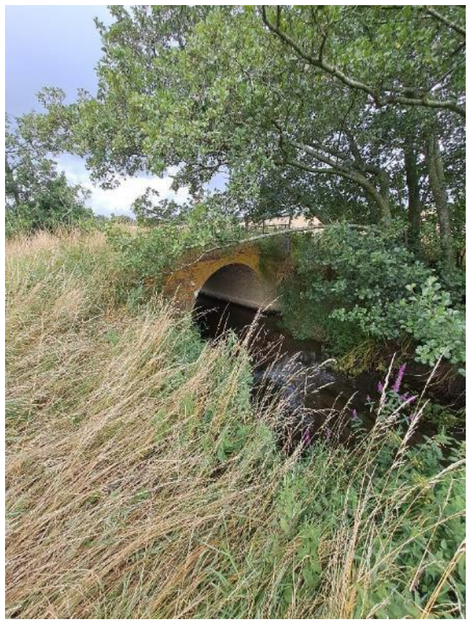
Photo 43: ES_012-013_P1 (24 July 2023)	Photo 44: ES_013_P1 (24 July 2023)	Photo 45: ES_013_P2 (24 July 2023)
		
Photo 46: ES_013_P3 (24 July 2023)	**Photo 47: ES_013_P4 (24 July 2023)**	**Photo 48: ES_013-014_P1 (24 July 2023)**
		

Photo 49: ES_013-014_P2 (24 July 2023)	Photo 50: ES_014_P1 (24 July 2023)	Photo 51: ES_014_P2 (24 July 2023)
		
Photo 52: ES_014_P3 (24 July 2023)	**Photo 53: FSA_Embankment_P1 (24 July 2023)**	**Photo 54: FSA_Embankment_P2 (24 July 2023)**
		

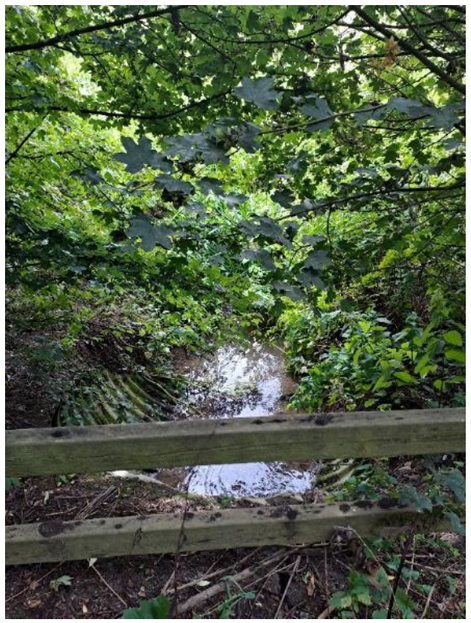
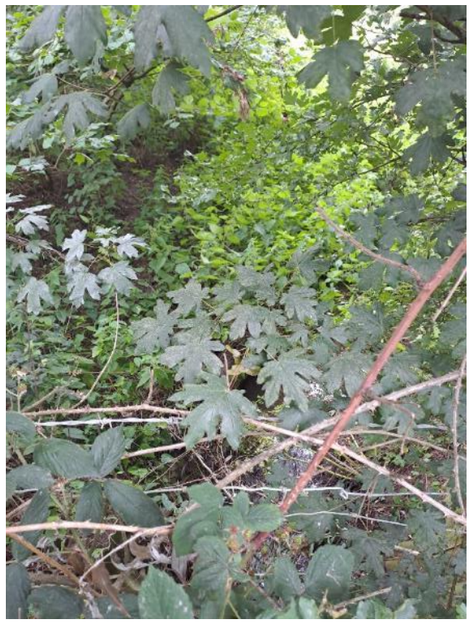
Photo 55: FSA_Embankment_P3 (24 July 2023)	Photo 56: FSA_Embankment_P4 (24 July 2023)	Photo 57: FSA_Embankment_P5 (24 July 2023)
		
Photo 58: FSA_South_P1 (24 July 2023)	**Photo 59: FSA_South_P2 (24 July 2023)**	**Photo 60: FSA_South_P3 (24 July 2023)**
		

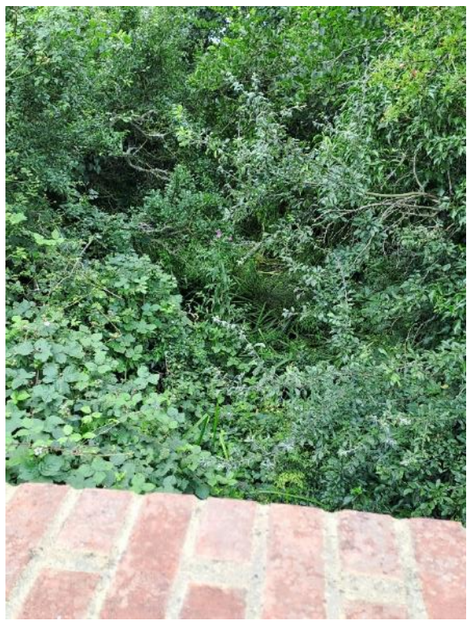
Photo 61: MILL_003_P1 (24 July 2023)	Photo 62: MILL_003_P2 (24 July 2023)	Photo 63: MILL_003_P3 (24 July 2023)
		
Photo 64: MILL_003_P4 (24 July 2023)	**Photo 65: MILL_003_P5 (24 July 2023)**	**Photo 66: MILL_003_P6 (24 July 2023)**
		

Photo 67: MILL_004_P1 (24 July 2023)	Photo 68: MILL_004_P2 (24 July 2023)	Photo 69: TRIB1_001_P1 (25 July 2023)
		
Photo 70: TRIB1_001_P2 (25 July 2023)	**Photo 71: TRIB1_001-002_P1 (25 July 2023)**	**Photo 72: TRIB1_001-002_P2 (25 July 2023)**
		

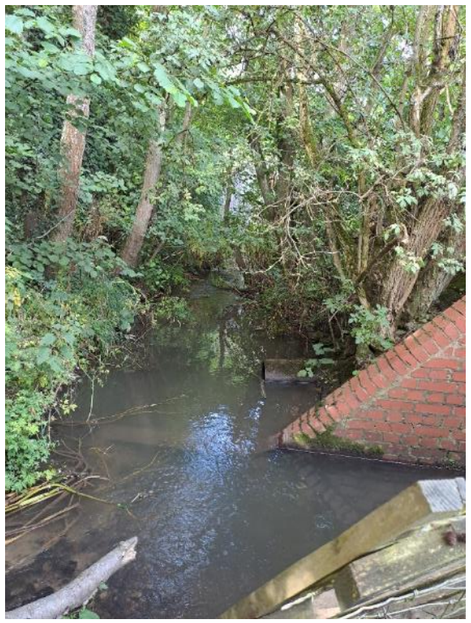
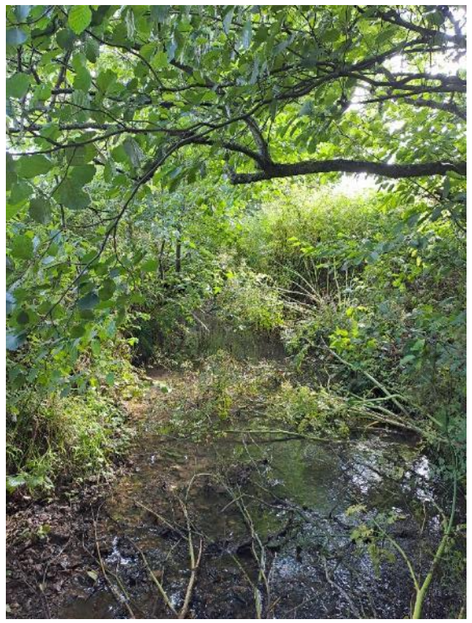
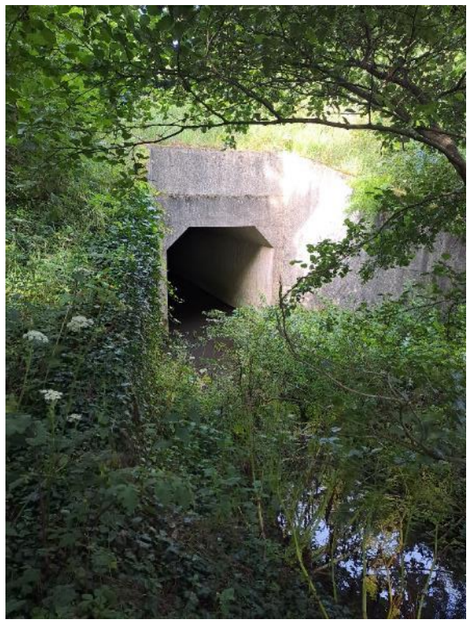
Photo 73: TRIB1_001-002_P3 (25 July 2023)	Photo 74: TRIB1_002_P1 (25 July 2023)	Photo 75: TRIB1_002_P2 (25 July 2023)
		
Photo 76: TRIB1_002_P3 (25 July 2023)	**Photo 77: TRIB1_002_P4 (25 July 2023)**	**Photo 78: TRIB1_002_P5 (25 July 2023)**
		

Photo 79: TRIB1_002_P6 (25 July 2023)	Photo 80: TRIB1_003_P1 (25 July 2023)	Photo 81: TRIB1_003_P2 (25 July 2023)

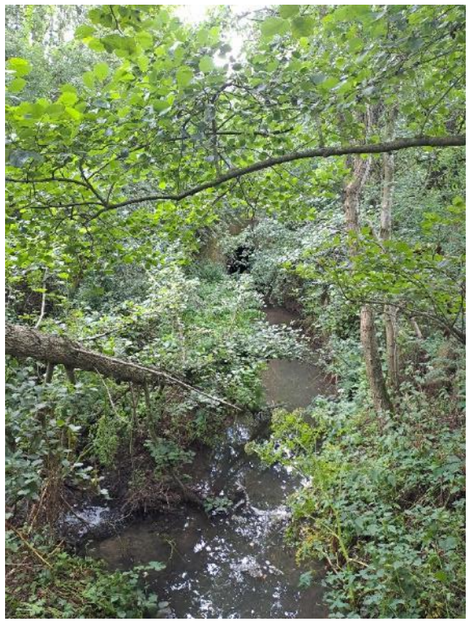
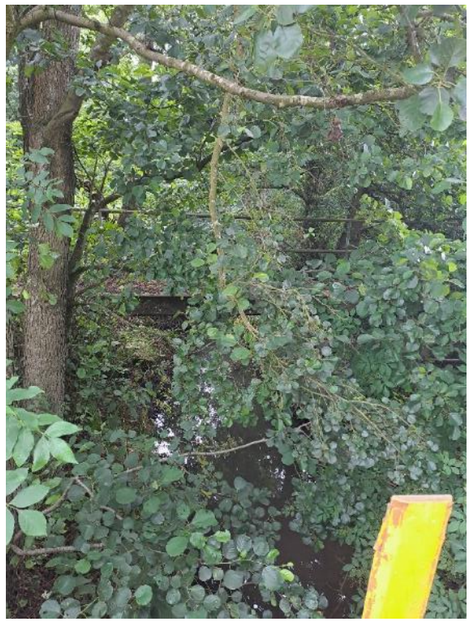

	

Photo 82: TRIB1_003_P3 (25 July 2023)	**Photo 83: TRIB1_004_P1 (25 July 2023)**	**Photo 84: TRIB1_004_P2 (25 July 2023)**
		

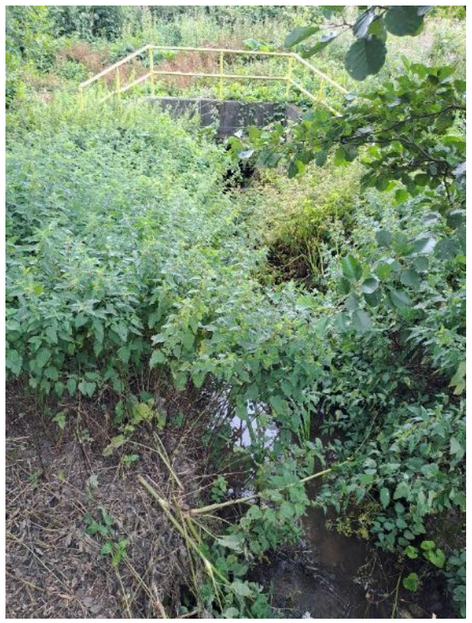
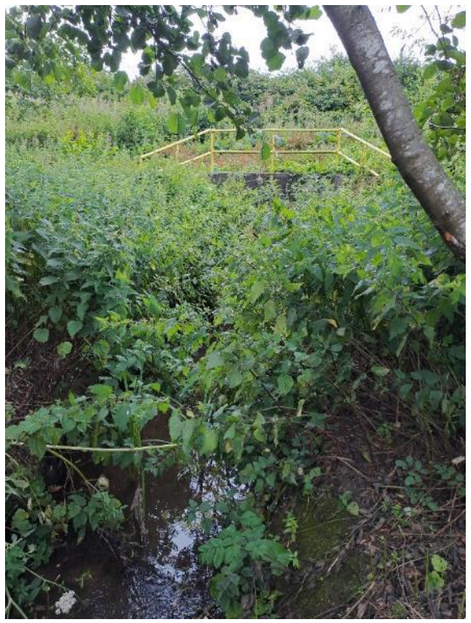
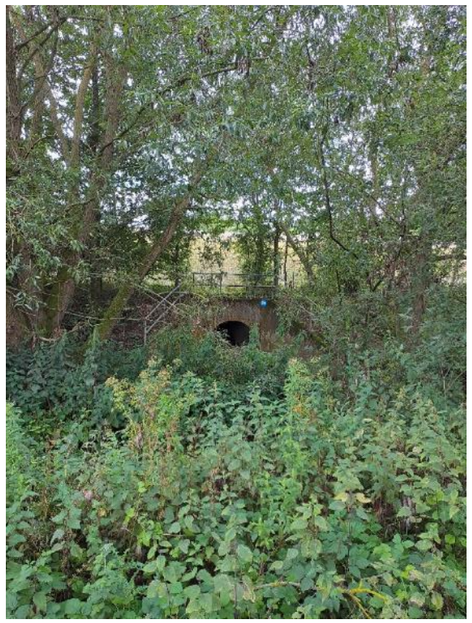
Photo 85: TRIB1_004_P3 (25 July 2023)	Photo 86: TRIB1_004-005_P1 (25 July 2023)	Photo 87: TRIB1_005_P1 (24 July 2023)
		
Photo 88: TRIB1_005_P2 (24 July 2023)	**Photo 89: TRIB1_005_P3 (25 July 2023)**	**Photo 90: TRIB1_006_P1 (24 July 2023)**
		

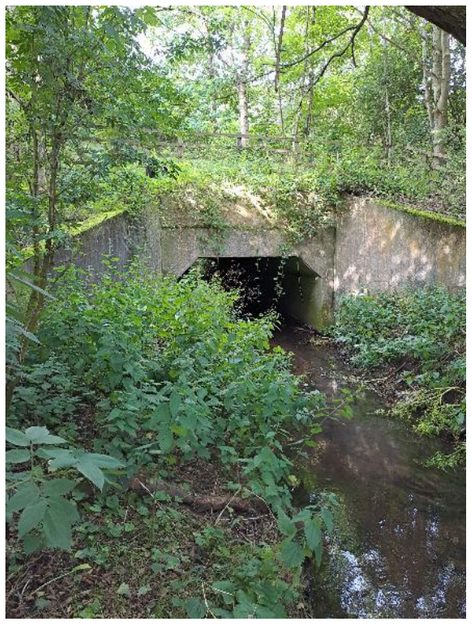
Photo 91: TRIB1_Pond_P1 (25 July 2023)	Photo 92: TRIB1_Pond_P2 (25 July 2023)	Photo 93: TRIB2_001_P1 (25 July 2023)
		
Photo 94: TRIB2_001_P2 (25 July 2023)	**Photo 95: TRIB2_002b_P1 (25 July 2023)**	**Photo 96: TRIB3_001_P1 (24 July 2023)**
		

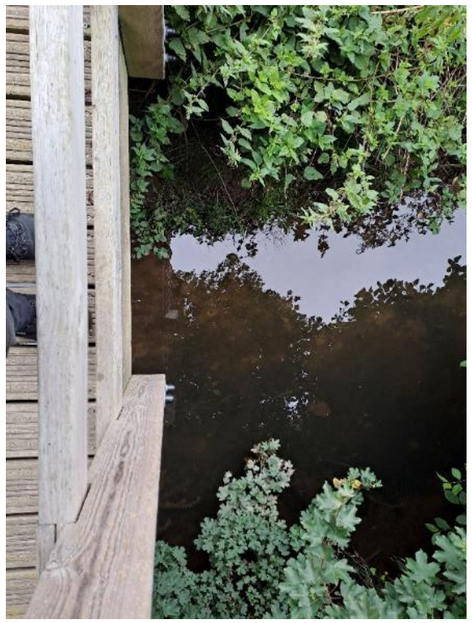
Photo 97: TRIB3_001_P2 (24 July 2023)	Photo 98: TRIB3_001_P3 (24 July 2023)	Photo 99: TRIB3_002_P1 (24 July 2023)
		
Photo 100: TRIB3_002_P2 (24 July 2023)	**Photo 101: TRIB3_002_P3 (24 July 2023)**	**Photo 102: TRIB3_003_P1 (24 July 2023)**
		

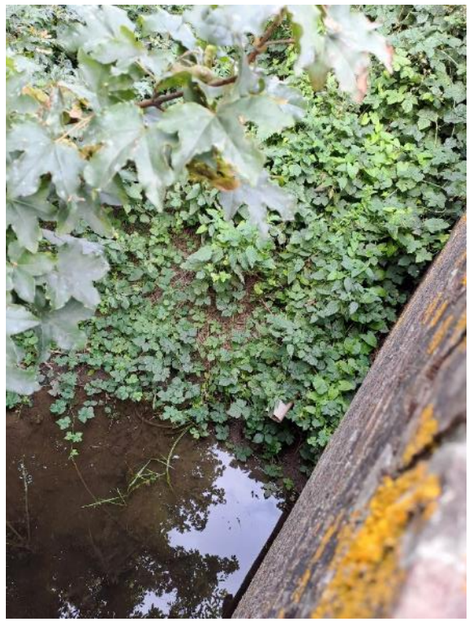
Photo 103: TRIB3_004_P1 (24 July 2023)	Photo 104: TRIB3_004_P2 (24 July 2023)	Photo 105: TRIB3_004_P3 (24 July 2023)
		
Photo 106: TRIB3_004_P4 (24 July 2023)	**Photo 107: TRIB3_004_P5 (24 July 2023)**	**Photo 108: TRIB3_004_P6 (24 July 2023)**
		

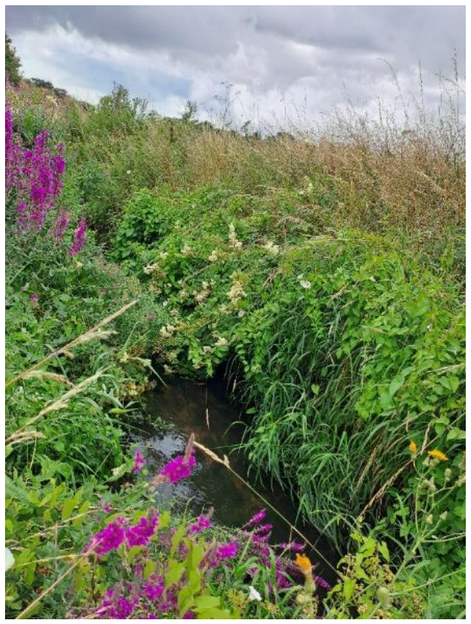
Photo 109: TRIB3_004_P7 (24 July 2023)	Photo 110: TRIB3_004_P8 (24 July 2023)	Photo 111: TRIB3_005_P1 (24 July 2023)
		
Photo 112: TRIB3_005_P2 (24 July 2023)	**Photo 113: TRIB3_005_P3 (24 July 2023)**	**Photo 114: TRIB3_005_P4 (24 July 2023)**
		

Photo 115: TRIB3_005_P5 (24 July 2023)		
		

Annex B Preliminary HDD Risk Assessment

Appendix 10.3 - Water Framework Directive Assessment

Stonestreet Green Solar

EPL 001 Limited

SLR Project No.: 425.064837.00001

28 May 2024

SLR

Designer's Health & Safety, Environmental and Technical Risk Assessment

Project Name :	**Stonestreet Green - Horizontal Directional Drilling**	Project No. : **425.064837.0001**	Contract No. :

Risk Level Action

Risk Level	Action Required
Low	Check that no further risks can be eliminated by design modifications Proceed with design
Medium	Consider alternative design or construction method If alternatives are not available, specify precautions to be adopted List residual hazards in risk register
High	Seek alternative solutions If alternatives are not available, specify precautions to be adopted and advise manager List residual hazards in risk register

Likelihood Categories

Score	Descriptor	Description
1	Improbable	about 1 in 1000
2	Remote	about 1 in 100
3	Occasional	about 1 in 10
4	Probable	likely to happen
5	Frequent	expect it to happen

Severity Category

Score	Health and Safety	Environmental	Technical
1	Minor injury / inconvenience Minor delay to work	Short term local damage	Design approval required
2	Minor injury	Med term local damage Short term regional damage	Onerous performance spec.
3	Reportable / Lost Time injury	Long term local damage Regional damage	Complex design solution Variable soil type
4	Major injury / illness Long term effects	Long term widespread damage	Limited SI data Highly variable soil type
5	Fatalities	Widespread permanent damage	Catastrophic element failure

Risk Profile

Severity Score	Likelihood Score 1	2	3	4	5
1	Low	Low			
2	Low	Low			
3	Low	Med	Med		
4				High	High
5				High	High

									Pre RCM's				Post RCM's				
Risk No.	Date	By	H&S Env Tech	Activity	Hazard	Cause	Owner	Comments / Persons Affected	Likelihood	Severity	Risk Rating	Risk Control Measures (RCMs)	Likelihood	Severity	Risk Rating	Residual Hazards	Owner
1	20/10/2023	DWA	Tech	Pre-Construction	Capability of specialist sub-contractor to complete works safely, on time and to budget	Insufficient experience and resources to undertake works	Principal Contractor	Health & safety, environmental impact, delays to the project, contractual disputes, additional cost and reputation of Client	3	3	Medium	The subcontractor should have experience in providing services for a minimum of 5 years in the respective field. Details of company information with organization structure, list of manpower with the CVs of key personnel, plant and machinery list mentioning year of manufacturing, support agencies, other facilities and resources. Details of completion of similar type of projects within last three years indicating their brief scope of work, value of work, contractual duration, actual completion of the project, client's name, contact details of that client, safety appreciation or compliance certification or inspection of plant and machinery, HSE statistics, LTI graph etc. Details of typical project planning and execution methodology. Details of past track record of similar works executed with references Details of current commitments – List of all the jobs under execution with the value of the job and percentage completion with particular emphasis on projects of similar magnitude carried out. Details of experience of working on similar projects. Details of HSE policy, safety manual, safety plan and implementation procedures in line with internationally accepted practices along with the statistics for the last three years. Details of quality assurance and quality control practices currently in place for the execution of similar work. Details of subcontractor's financial performance documents (audited balance sheets with profit and loss statements) and audit reports for the last 3 preceding years. Details of documents in support of Health, Safety, Environment and Quality [HSEQ] performance. Details of insurance of employee policy, medical evaluation including drug testing policy. Details of managing and monitoring performance. Details of safety and security evaluation policy. Copies of ISO 9001, 14001, OHSAS 18001 or any other accreditation and certification as applicable	2	2	Low	Contractual arrangements between Client & Principal Contractor Design Specification for Works Ground Conditions Groundwater Conditions	Client
2	20/10/2023	DWA	Tech	Pre-Construction	Crossing Specific Ground Conditions	The existing site investigation was designed to confirm baseline ground conditions and confirm the presence of made ground identified in the Phase 1 Report.	Client	Geotechnical investigations and surveys must be undertaken to identify ground and groundwater conditions at each proposed crossing. Poor or difficult ground (e.g., gravels, cobbles and sand) can create an unstable pipe route. Crossing locations may have to be relocated to reduce risks	3	4	High	Additional GI is required. It will provide more information on the ground conditions at each of the proposed HDD crossings including confirming the soil properties, and levels, and confirm pore water pressures in the overburden soils. GI is also required at each launch and reception pit, these may not be directly adjacent to the proposed crossing locations as the entry angle/depth of HDD bores is limited and suitable stand-off may be required. The bore profile must be designed to avoid where possible difficult ground conditions.	2	3	Medium	Unforeseen ground conditions, Unexpected natural subsurface obstacles, Unexpected manmade subsurface obstacles	Client
3	20/10/2023	DWA	Tech	Pre-Construction	Proximity to other underground, surface and overhead services	Proposed alignment of HDD crossings	Client	HDD crossing alignments must be considered to ensure minimal risk of service strikes and undermining. Recording of all services, stat plans, and surveys must be kept and decision-making appropriately recorded. Overhead lines must be avoided. Overhead lines are of particular concern during mobilization/demobilization, while handling drill pipe or loading and unloading heavy equipment. Always maintain a safe separation between equipment and power lines.	3	5	High	Services search already completed, results digitised. Proposed HDD crossing locations to be cross-referenced with respect to known services. The bore profile must be designed to maintain acceptable clearances between underground utilities and structures, and the final reamed hole. If crossing any live services, an emergency rescue plan must be developed and briefed to all teams.	1	5	Medium	Unknown services	Client
4	20/10/2023	DWA	H & S		Open Excavations	Entry & Exit Pits, Mud Pit	Principal Contractor	Physical Injuries Falls Entry into an excavation Collapse of side walls Public trespass working in excavations Toxic Atmosphere Confined Spaces	3	5	High	Erect and maintain barriers around pits using Heras fencing. Erect and maintain warning signage. Trenches and excavation to be properly supported or battered back to safe angle of repose No persons are to enter an excavation unless safe to do so. Access shall be by steps or tied ladders into a safe zone. Ladders shall be clearly tagged/identified and inspected regularly. Excavations are to be as per temporary works design. Regular inspections of excavations (minimum daily and at the start of every shift and after changes to conditions). Gas monitors are to be used to check the atmosphere. Ensure the monitor is calibrated and in date. Trained competent personnel to use the equipment. Records to be kept. Do not site plant that may derogate the O2 levels within space. Ensure when possible free free-flowing air circulation at all times. Buoyancy aids shall be provided where deemed necessary. Authorised personnel only. Fence off and ensure signage is in place at the end of each shift. Confined space entry shall be in accordance with Risk Assessments and emergency plans.	1	5	Medium		Principal Contractor
5	20/10/2023	DWA	H & S	Pilot Bore Reaming Pull Back	Installation of HDD bore in close proximity of utilities and services	The alignment of proposed HDD crossing could not be relocated to avoid passing beneath or close to known services	Principal Contractor	Ensure the appropriate authorities, external parties and third parties have been engaged and written confirmation has been received.	2	5	High	Carry out utility sweep of each works area, locate and trace using utility drawings provided. CAT/Genny and Ground Probing Radar to scan the area and mark up its locations using marker paint, marker flags or wooden pegs. If there is any risk to utilities from the drilling activity, a window must be excavated at or near the utility to visually monitor the potentially hazardous situation. A vacuum unit is required to remove the drilling fluid during this process and high-pressure drilling fluid hazards must be addressed. If the bore passes closely by a utility, it may be necessary to continuously monitor the separation after the drill head or reamer passes the window as the drill string or product pipe may subsequently contact the utility during the completion of the installation. Where this is not possible, for example in the middle of a road or waterway, the depth of the directional drill must be visibly verified at the start of the exclusion zone and the finish. Place highly visible markers on either side of the overhead hazard or designate an individual to notify equipment operators as they approach The HDD Operator and/or support worker shall maintain all required clearances and offsets from existing utilities.	1	5	Medium	Unknown services	Client
6	20/10/2023	DWA	H & S	Pilot Bore Reaming Pull Back	The toppling of vehicles on uneven/soft/sloping ground	Poor ground conditions in vicinity of proposed HDD crossings	Principal Contractor		2	3	Medium	Access roads designed to avoid traversing slopes Speed limits appropriate to conditions All plant and vehicle operators to be suitably qualified HDD working site to be level or benched on steep ground. Suitable working platform required	1	3	Low		Principal Contractor
7	21/10/2023	DWA	Tech	Pilot Bore	Downhole failure of drilling equipment	Poor maintenance of equipment. Applying too much torque to drill string. Excessive borehole deviation	Specialist Sub-Contractor		2	3	Medium	Check all drilling equipment before being run into the hole Trip out to check the condition of equipment after the set number of hours recommended by the manufacturer/supplier Monitoring and recording of drilling forces to ensure they are within the tolerances of the equipment Ensure the sand content of drilling fluid is minimised to reduce abrasive wear Fishing for equipment lost in hole	1	3	Low	unable to recover broken drill string, abandon hole, grout up and rebore on new alignment	Specialist Sub-Contractor

									Pre RCM's				Post RCM's				
Risk No.	**Date**	**By**	**H&S Env Tech**	**Activity**	**Hazard**	**Cause**	**Owner**	**Comments / Persons Affected**	**Likelihood**	**Severity**	**Risk Rating**	**Risk Control Measures (RCMs)**	**Likelihood**	**Severity**	**Risk Rating**	**Residual Hazards**	Owner
8	20/10/2023	DWA	Tech	Pull Back	Excessive borehole deviation	Ability to complete borehole Deviation beyond the flexibility of the drill string and HDPE duct	Specialist Sub-Contractor		2	3	Medium	The HDD Operator and/or support worker shall calibrate the tracking and locating equipment at the beginning of each work day and maintain a calibration log. The HDD Operator and/or support worker shall monitor and record the alignment and depth readings provided by the tracking system every 10 meters for normal conditions, and every 1 meter when precise alignment control is necessary.	2	3	Medium		
9	21/10/2023	DWA	Tech	Pilot Bore	Accumulation of cuttings in borehole leading to equipment stuck in hole	Inadequate monitoring of flush returns. Insufficient reaming of the bore. Incorrect mud pressure/flow rate. Unsuitable mud rheology to lift and carry arising	Specialist Sub-Contractor		2	4	Medium	Monitoring the volume of cuttings removed from the HDD against volume drilled Trained mud engineer in charge of drilling fluids Real time downhole Annular Pressure Monitoring to identify restrictions in borehole annulus and trigger remedial action	1	4	Medium	unable to recover stuck drill string, abandon hole, grout up and rebore on new alignment	Specialist Sub-Contractor
10	21/10/2023	DWA	Tech	Pull Back	HDPE duct stuck during pullback		Specialist Sub-Contractor		2	4	Medium	Hole cleaning run(s) performed before pullback Installation forces monitored Safe pull limit adhered to	1	4	Medium	unable to recover stuck drill string, abandon hole, grout up and rebore on new alignment	Specialist Sub-Contractor
11	21/10/2023	DWA	Env	Pilot Bore	Breakout of drilling fluid to the surface during pilot drilling		Specialist Sub-Contractor	Contamination of groundwater,flora and fauna, impact on floodplain/wetlands	2	4	Medium	Design with sufficient depth below surface for expected ground conditions Monitoring of drilling fluid returns and volumes to warn of inadequate hole cleaning Drilling fluid to be of sufficient viscosity and properties for the ground being drilled and cutting size generated Visual monitoring of surface water features, downstream pH & turbidity monitoring The stopping point of the pilot hole considers ground conditions found during pilot drilling Have Lost Circulation Materials available on-site to seal any breakout Grout if necessary	1	4	Medium		Specialist Sub-Contractor
12	20/10/2023	DWA	Tech	Pilot Bore	Unthreading from downhole equipment during back reaming due to insufficient make-up torque applied to connections		Specialist Sub-Contractor		2	3	Medium	Competent personnel making drill pipe / assembly connections Drilling technique to maintain consistent torque and avoid over-spinning Use of cradles to assist in aligning drill rods Use of hydraulic double clamps to tighten connections	1	3	Low		Principal Contractor
13	21/10/2023	DWA	Env	Reaming	Breakout of drilling fluid to the surface during reaming		Specialist Sub-Contractor	Contamination of groundwater,flora and fauna, impact on floodplain/wetlands	2	3	Medium	Monitoring of drilling fluid returns and volumes to warn of inadequate hole cleaning Drilling fluid to be of sufficient viscosity and properties for the ground being drilled and cutting size generated Pilot hole stopped in competent ground before exit point and only advanced to exit when reaming to that point is completed Have Lost Circulation Materials available on site to seal any breakout Grouting if necessary	1	3	Low		Specialist Sub-Contractor
14	20/10/2023	DWA	Tech	Reaming	Reaming fails to follow pilot hole		Specialist Sub-Contractor		2	3	Medium	Use of sufficiently long lead rods in front of stabiliser Use of a passive tool on lead rods (e.g. bull nose) Monitoring of drilling forces during forward reaming and comparison to the pilot hole rate of penetration Trip out and survey the reamed hole if in doubt	1	3	Low		Principal Contractor
15	20/10/2023	DWA	Tech	Pull Back	HDPE duct is damaged during pullback		Specialist Sub-Contractor		2	3	Medium	Design to avoid unsuitable ground conditions if possible Cleaning run satisfactorily completed before pullback Monitoring of forces during pullback operations Duct removed, borehole reconditioned, new or repaired duct installed	1	3	Low		Principal Contractor
16	20/10/2023	DWA	Tech	Pull Back	The duct sliding downhole after installation		Specialist Sub-Contractor		2	3	Medium	Temporarily secure duct to rig anchor block after installation Grouting annulus between duct and borehole	1	3	Low		Client
17	21/10/2023	DWA	Tech	Pull Back	Loose gravel and cobbles prevent or jam duct installation		Specialist Sub-Contractor		2	3	Medium	High volume flush from the hole during initial duct pullback to prevent stones from being dragged into the borehole Clearing of arisings from around the exit point Pushed duct installation	1	3	Low		Specialist Sub-Contractor
18	20/10/2023	DWA	Tech	Pilot Bore Reaming Pull Back	Drilling stopped due to nuisance noise/lighting to neighbouring residences/receptors		Principal Contractor		2	3	Medium	Placement of topsoil stockpiles, office cabins, etc as shielding Engines etc enclosed in silencing units Pre-construction baseline noise monitoring Installation of dedicated sound& light barriers if required	1	3	Low		Principal Contractor
19	20/10/2023	DWA	Tech	Pilot Bore Reaming Pull Back	Collapse of soft ground in superficial deposits at entry/exit points		Specialist Sub-Contractor		2	3	Medium	Ensure drilling fluid characteristics are suitable for ground conditions (e.g. viscosity, fluid loss/filter cake) HDD is designed to drill in the most suitable ground conditions Casing any unstable areas near entry or exit Excavate collapsed zones if sufficiently shallow	1	3	Low		Principal Contractor
20	20/10/2023	DWA	Tech	Pilot Bore	Unintentional sliding downhole of unsecured drilling rods		Specialist Sub-Contractor		2	3	Medium	Safety chain attached when tripping drilling rods in and out of the initial section of the borehole Rig personnel aware of risk and methodology	1	3	Low		Specialist Sub-Contractor

									Pre RCM's				Post RCM's				
Risk No.	**Date**	**By**	**H&S Env Tech**	**Activity**	**Hazard**	**Cause**	**Owner**	**Comments / Persons Affected**	**Likelihood**	**Severity**	**Risk Rating**	**Risk Control Measures (RCMs)**	**Likelihood**	**Severity**	**Risk Rating**	**Residual Hazards**	Owner
21	20/10/2023	DWA	Env		Construction affects local fauna – especially nesting birds		Principal Contractor		2	3	Medium	Programme to avoid sensitive seasons for wildlife	1	2	Low		Principal Contractor
												Construction site sufficiently distant from wildlife sites	1	2	Low		
22	20/10/2023	DWA	H & S		Working adjacent to the waters edge.		Principal Contractor	Water; Unguarded edges; Contamination; Rats Drowning; Slips, Trips and Falls - Injury to personnel; Leptosirosis (weil's Disease).	3	5	High	Permit to work; Tool-Box talk; Ensure suitable edge protection in place; Wear Life Jackets/Buoyancy Aids; PPE; Site Awarness; Good House keeping; Communication; Familiarisation; Post warning signs; Awarness of Risk of Leptospirosis - Good Hygine	1	5	Medium		
																	Client

Health and Safety	4 No.	**Medium**	
Environmental	3 No.	**Medium**	
Technical	15 No.	**Medium**	

Annex C EA Consultation of WFD Assessment Scope

Appendix 10.3 - Water Framework Directive Assessment

Stonestreet Green Solar

EPL 001 Limited

SLR Project No.: 425.064837.00001

28 May 2024

From: [redacted]>
Sent: Tuesday, September 12, 2023 1:14 PM
To: [redacted]>
Cc: [redacted]>; Stonestreet Quod Team <[redacted]>
Subject: RE: KSL 324049 CM - Stonestreet Green solar - EA data request

[redacted]

Thank you for your email.

We are content.

Kind Regards,

[redacted]
Planning Specialist
Sustainable Places – Kent and South London

kslplanning@environment-agency.gov.uk

From: [redacted]>
Sent: Monday, September 11, 2023 1:41 PM
To: [redacted]>
Cc [redacted] Stonestreet Quod Team <[redacted]>
Subject: RE: KSL 324049 CM - Stonestreet Green solar - EA data request

Hi J[redacted],

Thanks for sending this through. I understand from [redacted] and [redacted] that there is some missing information. Could you please confirm when this can be sent through?

I think you are also due to come back on the action below:

> *9) PINS in their response to the Scoping Report identified the need for a Water Framework Directive Compliance Assessment, albeit limited in scope to the proposed HDD and temporary crossings of the watercourse. Is the EA content with the limited scope suggested by PINS?*

Could you let me know if you are content with this approach?

Many thanks,

[redacted]

References

[1] Planning Inspectorate (2017), Guidance, Nationally Significant Infrastructure Projects - Advice Note Eighteen: the Water Framework Directive, Available at: https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-eighteen-the-water-framework-directive/nationally-significant-infrastructure-projects-advice-note-eighteen-the-water-framework-directive (Accessed February 2024)

[2] European Union (2020), Directive 2000/60/EC of the European Parliament and of the Council of 23rd October 2000 establishing a framework for Community action in the field of water policy. Available at: https://www.legislation.gov.uk/eudr/2000/60/contents (Accessed February 2024.) June 2022.

[3] European Union (2020), Directive 2000/60/EC of the European Parliament and of the Council of 23rd October 2000 establishing a framework for Community action in the field of water policy. Available at: https://www.legislation.gov.uk/eudr/2000/60/contents (Accessed February 2024).

[4] Environment Agency (2016), Guidance, Water Framework Directive assessment for a flood risk activity, How to assess the impact of a flood risk activity and decide whether it supports the objectives of your local River Basin Management Plan. Available at: https://www.gov.uk/government/publications/water-framework-directive-how-to-assess-the-risk-of-your-activity (Accessed February 2024).

[5] Environment Agency (2022), Guidance, South East river basin district river basin management plan: updated 2022, Available at https://www.gov.uk/guidance/south-east-river-basin-district-river-basin-management-plan-updated-2022#:~:text=The%20South%20East%20river%20basin%20district%20(%20RBD%20)%20river%20basin%20management,these%20challenges%20can%20be%20managed. (Accessed February 2024).

[6] DEFRA (2022), Catchment Data Explorer, Available at https://environment.data.gov.uk/catchment-planning/ (Accessed February 2024).

[7] British Geological Survey. (2023). GeoIndex Onshore [online]. Available at: [redacted]Accessed September 2023).

[8] DEFRA. (2022). Magic Map [online]. Available at: https://magic.defra.gov.uk/MagicMap.aspx (Accessed September 2023).

[9] Environment Agency (2022), Guidance, South East river basin district river basin management plan: updated 2022, Available at https://www.gov.uk/guidance/south-east-river-basin-district-river-basin-management-plan-updated-2022#:~:text=The%20South%20East%20river%20basin%20district%20(%20RB

D%20)%20river%20basin%20management,these%20challenges%20can%20be%20managed. (Accessed February 2024).

10 DEFRA (2022), Catchment Data Explorer, Available at https://environment.data.gov.uk/catchment-planning/ (Accessed February 2024).

11 UK Centre for Ecology and Hydrology (2023), Flood Estimation Handbook Web Service, Available at: [redacted] February 2024). September 2023.

12 Old Maps Online (2023), Available at: [redacted] Accessed February 2024). September 2023.

13 DEFRA (2022), Magic Map [online]. Available at: https://magic.defra.gov.uk/MagicMap.aspx (Accessed February 2024).