EAST YORKSHIRE SOLAR FARM

East Yorkshire Solar Farm

EN010143

Environmental Statement

Volume 2, Appendix 9-2: Water Framework Directive (WFD) Assessment
Document Reference: EN010143/APP/6.2

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

November 2023
Revision Number: 00

2009

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Executive Summary

ES1 This Water Framework Directive (WFD) assessment has been undertaken to determine the potential impacts of the proposed East Yorkshire Solar Farm development (the Scheme) on WFD waterbodies and to outline appropriate mitigation where necessary. This compliance assessment considers the impacts on WFD quality elements in surface and groundwater bodies.

ES2 In accordance with Environment Agency guidance (Ref. 4, Ref. 5) and the Planning Inspectorate's Advice Note Eighteen: The Water Framework Directive (Ref. 1), this WFD assessment comprises Screening and Scoping assessments, identifies requirements for WFD impact mitigation commitments in the Development Consent Order (DCO) Application for the Scheme, and identifies requirements for further WFD impact assessment at future design stages.

ES3 The risk of impacts on the following water bodies has been screened out and scoped out of the WFD assessment for the Scheme:

a. Aire from Fryston Beck to River Ouse Water Body (GB104027063037);

b. Birk Lane Drain Catch (tributary of Derwent) Water Body (GB104027063430); and

c. Barmby Water Body (GB30430722).

ES4 All Scheme activities were screened out of the WFD, except for installation of on-site and Interconnecting Cables, and the electricity export connection to the National Grid (the Grid Connection Corridor). The impacts relate predominantly to the non-intrusive and intrusive open-cut crossing of watercourses during construction. Potential risks from these activities were scoped in for the following water bodies:

a. Ouse from R Wharfe to Upper Humber Water Body (GB104027064270);

b. Derwent from Elvington Beck to River Ouse Water Body (GB104027068311);

c. Fleet Dike catch (tributary of Ouse) Water Body (GB104027063630);

d. Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690);

e. Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400);

f. Derwent Sherwood Sandstone (GB40401 G700600); and

g. East Riding Mercia Mudstone (GB40402 G990200).

ES5 The excavation of send and receive pits to facilitate non-intrusive directional drilling beneath the watercourse bed has the potential to cause impacts to biological, physico-chemical, and groundwater quality elements.

ES6 Short-term disturbance of watercourses during the construction of intrusive open-cut crossings has the potential to impact on biological, physico-chemical, and hydromorphological quality elements.

ES7 The potential impacts from the Scheme will be mitigated through a range of mitigation measures including those embedded in the design (e.g. watercourse buffers), as well as the implementation of measures contained in the detailed Construction Environmental Management Plan (CEMP) and Surface Water Drainage Strategy, both to be prepared post-consent (building on the **Framework CEMP [EN010143/APP/7.7]**) and the **Framework Surface Water Drainage Strategy Appendix 9-4, ES Volume 2 [EN010143/APP/6.2]).** A WFD Mitigation and Enhancement Strategy will also be developed post-consent outlining length-for-length equivalent watercourse enhancements to mitigate culvert extensions.

ES8 Overall, the assessment indicates that the Scheme will not cause deterioration in any WFD quality element for any waterbody, nor will it prevent future improvement, including the achievement of the wider WFD objectives in the Humber River Basin Management Plan, or mitigation measures developed to achieve Good status.

1. Introduction

1.1 Background

1.1.1 This Water Framework Directive (WFD) Assessment has been produced in support of the Environmental Statement (ES) which has been commissioned by East Yorkshire Solar Farm Limited (hereafter referred to as 'the Applicant') in relation to an application for a Development Consent Order (DCO application) for East Yorkshire Solar Farm (hereafter referred to as the 'Scheme'). In particular it relates to **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**,

1.1.2 The Scheme will comprise the construction, operation (including maintenance), and decommissioning of a solar photovoltaic (PV) electricity generating facility with a total capacity exceeding 50 megawatts (MW) and export connection to the national grid, at National Grid's Drax Substation.

1.1.3 The design life of the Scheme is 40 years with decommissioning to commence 40 years after final commissioning (currently anticipated to be 2027 to 2067). Decommissioning is therefore currently anticipated to commence in 2067.The Scheme includes approximately 1,276.5 hectares (ha) of land for solar PV generating panels, a grid connection and associated infrastructure, along with landscaping and biodiversity measures.

1.1.4 The Order limits are shown on **Figure 1-2, ES Volume 3 [EN010143/APP/6.3]** and represent the maximum extent of land to be acquired or used for the construction, operation (including maintenance), and decommissioning of the Scheme. The Site is the collective term for all land within the Order limits and comprises the following elements: Solar PV Site, Ecology Mitigation Area, Interconnecting Cable Corridor, Grid Connection Corridor, and Site Accesses (1,276.5 ha in total).

1.1.5 The Grid Connection Cables will connect the Grid Connection Substations in Solar PV Area 1c to the National Grid Drax Substation. A new transformer will be installed by National Grid in an existing spare bay of the National Grid Drax Substation to accommodate the Scheme connection.

1.1.6 Full details of the Scheme and its components are provided in **ES Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1].**

1.1.7 In accordance with the Planning Inspectorate's Advice Note Eighteen (Ref. 1), a three-stage approach may be adopted to the WFD Assessment: Screening, Scoping and Impact Assessment. Each step is described in section 2 of this report. This report covers all of these three stages.

1.2 Study Area

1.2.1 The Site is located within the administrative areas of North Yorkshire Council and East Riding of Yorkshire Council. The Solar PV Site is located approximately 1.6 kilometres (km) north-west of new residential properties in the market town of Howden at the closest point, and approximately 1.3 km east of the villages of Breighton and Wressle. The closest properties in the hamlets of Gribthorpe and Brind and the village of Spaldington are approximately 20 metres (m) from the Site, whilst the closest properties in the hamlet of Willitoft are approximately 120 m from the Site. Due to the

provision of buffers, and land for landscaping and habitat enhancement, the actual distance of separation between residences and solar PV infrastructure will be greater.

1.2.2 For the purposes of this assessment, and consistent with **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**, a general Study Area of 1 km from the Order limits has been considered in order to identify water bodies that are hydrologically connected to the Scheme, and potential works associated with the Scheme, that could cause direct impacts. However, given that watercourses flow and water quality impacts propagate downstream, where relevant the assessment also considers a wider study area to as far downstream as a potential impact may influence the quality or quantity of the water body. Professional judgement has been applied to identify the extent to which such features are considered.

1.2.3 The Study Area is shown in **Annex A, Figure 9-2-1**.

1.2.4 The Study Area falls within the following water body catchments (Ref. 2):

a. Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River

b. Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River

c. Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River

d. Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) - River

e. Aire from Fryston Beck to River Ouse Water Body (GB104027063037) - River

f. Birk Lane Drain Catch (tributary of Derwent) Water Body (GB104027063430) - River

g. Barmby Water Body (GB30430722) - Lake

h. Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater

i. Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater

j. East Riding Mercia Mudstone (GB40402 G990200) - Groundwater

1.2.5 There are numerous tributaries of the WFD reportable water bodies present within the Study Area; these are predominantly unnamed agricultural ditches, drains and springs. It should be noted that WFD requirements apply equally to all watercourses regardless of whether they are Environment Agency reportable reaches.

1.2.6 A full summary of the baseline conditions for the Study Area is provided later in this report (section 4).

1.3 Introduction to the Water Framework Directive

1.3.1 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref. 3), commonly referred to as the Water Framework Directive (WFD), aims to protect and enhance the water environment.

1.3.2 The WFD takes a holistic approach to sustainable management of the water environment by considering interactions between surface water, groundwater and water-dependent ecosystems. Ecosystem conditions are evaluated according to interactions between classes of biological, chemical, physico-chemical and hydromorphological elements known as 'Quality Elements'.

1.3.3 Under the WFD, ‘water bodies’ are the basic management units, defined as all or part of a river system or aquifer. Waterbodies form part of a larger ‘river basin district’ (RBD), for which ‘River Basin Management Plans’ (RBMPs) are used to summarise baseline conditions and set broad improvement objectives. RBMPs are produced every six years, in accordance with the river basin management planning cycle. The current RBMPs are Cycle 3 and were published in 2022.

1.3.4 In England, the Environment Agency is the competent authority for implementing the WFD, although objectives are delivered in partnership with other public bodies and private organisations, for example local planning authorities, water companies, rivers trusts, and private landowners and developers.

1.3.5 The Environment Agency is also responsible for managing flood risk and other activities on Main Rivers. Local planning authorities or drainage boards are typically responsible for consenting activities on Ordinary Watercourses. Local planning authorities are typically responsible for highways drains, and landowners are typically responsible for ditches and watercourses within their property including piped watercourses and culverts. While the Environment Agency is ultimately responsible for enforcing the WFD on any water body, local authorities or Internal Drainage Boards are required to plan and consent WFD related activities on Ordinary Watercourses.

1.3.6 As part of its regulatory and statutory consultee role on development applications and environmental permitting (under the Environmental Permitting Regulations (England and Wales) 2016), the Environment Agency and WFD-partnering organisations must consider whether proposals for new developments have the potential to:

a Cause a deterioration of any quality element of a water body from its current status or potential; and / or

b Prevent future attainment of good status or potential where not already achieved.

1.3.7 Regulation 33 of the WFD states that public bodies “*must, in exercising their functions so far as affecting a river basin district, have regard to - (a) the river basin management plan for that district as approved under regulation 31, and (b) any supplementary plan prepared under regulation 32.”* The Applicant must therefore reflect water body improvement priorities as outlined in the Humber RBMP in the DCO Application.

1.3.8 In determining whether a development is compliant or non-compliant with the WFD objectives for a water body, the Environment Agency and partnering organisations must also consider the conservation objectives of any Protected Areas (e.g. Natura 2000 sites or water dependent Sites of Special Scientific Interest) and adjacent WFD water bodies, where relevant.

2. Methodology

2.1.1 There are no fixed methods for WFD assessment. The nature of the water environment and the breadth of the legislation mean that assessments are tailored to proposals on a case-by-case basis.

2.1.2 The following general guidance is available which has been applied for this assessment:

a. Environment Agency, Water Framework Directive risk assessment. How to assess the risk of your activity (Ref. 4).

b. Environment Agency, Protecting and improving the water environment. Water Framework Directive compliance of physical works in rivers (Ref. 5).

c. The Planning Inspectorate, Advice Note Eighteen: The Water Framework Directive (Ref. 1).

2.1.3 A stepwise approach consisting of screening, scoping and impact assessment phases is generally followed in order to: (a) rationalise the levels of WFD assessment and impact mitigation that are required; and (b) verify that proposals meet the requirements of the WFD. The general approach is described by Advice Note Eighteen and briefly summarised below.

2.1.4 This WFD assessment comprises Screening and Scoping assessments, identifies requirements for WFD impact mitigation commitments in the DCO application submission, and identifies requirements for further WFD impact assessment at future design stages.

Stage 1: Screening

2.1.5 Screening identifies the zone of influence of a proposed development, and if proposed activities pose a risk to the water environment. It is used to identify if there are activities that do not require further consideration for WFD objectives, for example activities which have been ongoing since before the current RBMP plan cycle and which have thus formed part of the baseline.

Stage 2: Scoping

2.1.6 Scoping is used to identify any potential impacts of the proposed activities to specific WFD receptors and their water quality elements. This involves review of WFD impact pathways, shortlisting which WFD water bodies and quality elements could or could not be affected by proposed activities, and collecting baseline information from the relevant RBMP on the status and objectives for each water body.

Stage 3: Impact Assessment

2.1.7 This involves rationalised assessment of water bodies and quality elements that could be affected by proposed activities, in order to identify any areas of WFD non-compliance. Proposed activities are reviewed in terms of both positive and negative impacts, and the baseline mitigation measures, enhancements, and contributions to the WFD objectives described in the RBMP. Any proposed activities with potentially deleterious impacts are

reviewed simultaneously with their corresponding mitigation proposals, to determine a net effect on WFD objectives.

Mitigation Commitments

2.1.8 Proposed mitigation activities relied upon to demonstrate compliance at any of the stages referred to above must be appropriately defined and sufficiently secured.

Further Assessment if WFD Derogation is to be Considered by the Applicant

2.1.9 WFD Regulation 17 and Regulation 19 set out 'last resort' planning and legal processes for WFD Derogation. However, as WFD Derogation is not required for the Scheme and therefore not being considered by the Applicant the methodology for this is not described within this report.

2.2 Desk Study

2.2.1 A desk-based study was carried out to capture information pertaining to the Scheme to support the understanding of baseline conditions. Review of relevant information relating to the Study Area was undertaken to develop a baseline overview for WFD catchments, watercourses and surrounding areas. The following data sources were used for the desk study:

a. Environment Agency WFD data (Ref. 2);

b. Defra's Multi-agency geographical information for the countryside website (MAGIC) (Ref. 6);

c. Historical maps (Ref. 7);

d. Geology and soil data (Ref. 8 and Ref. 9);

e. Aerial photography (Ref. 10);

f. Hydrological information (Ref. 11); and

g. Climate information (Ref. 12).

2.2.2 For a full summary of the baseline conditions for the Study Area refer to **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

2.3 Field Survey

2.3.1 A site walkover survey was undertaken by an experienced Water Scientist and a Hydromorphologist on 30 November 2022 to assess watercourse connectivity, quality, and condition. It included watercourses within the Solar PV Site, Interconnecting Cable Corridor and Grid Connection Corridor. This survey covered the Site Boundary as described at the time of survey and while changes have since been made to the Order limits (see **Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN10143/APP/6.1]**), the survey covered the principal waterbodies that might be affected by the Scheme and has since been supported by further observations undertaken as part of the development of the **Aquatic Ecology Baseline Report**

(Appendix 8-4, ES Volume 2 [EN10143/APP/6.2], thus ensuring that survey findings remain valid.

2.4 Assumptions and Limitations

2.4.1 This assessment is based on baseline and Scheme design information available at the time of writing in October 2023. It is based on the Scheme design set out in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]** and shown in **Figure 2-3, ES Volume 3 [EN010143/APP/6.3]** and the assumptions relating to the Water Environment that are outlined in **Chapter 9: Flood Risk, Drainage and Water Environment ES Volume 1 [EN010143/APP/6.1]**.

3. WFD Screening and Scoping

3.1 WFD Screening

3.1.1 The purpose of the WFD screening stage is to identify a zone of influence of the Scheme and to determine whether that influence has the potential to adversely impact upon WFD water body receptors. The screening stage also identifies specific activities of the Scheme that could affect receptor water bodies' WFD status and carries them forward to subsequent stages of the assessment process. Water body receptors that are screened out are not carried forward, and justification is provided.

3.2 Screening of WFD Water Bodies

3.2.1 The Scheme interacts with ten WFD water bodies and of these seven are screened into this assessment. WFD Screening of these water bodies is provided in **Table 1**.

Table 1. Screening of WFD waterbodies potentially impacted by the Scheme

Water Body (ID)	Screening Outcome	Justification
Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River	In	WFD water bodies may be directly impacted by the Scheme due to a range of activities that would interact with the local watercourse network during construction, operation, and decommissioning phases of the Scheme.
Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River		
Fleet Dike catch (tributary of Ouse) Water Body (GB104027063630) - River		
Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) - River		
Aire from Fryston Beck to River Ouse Water Body (GB104027063037) - River	Out	The Aire is approximately 3 km south from the Scheme boundary and would not be directly impacted by the Scheme.
Birk Lane Drain Catch (tributary of Derwent) Water Body (GB104027063430) - River		The Birk Lane Drain is approximately 1.5 km north from the Scheme boundary and would not be directly impacted by the Scheme. The wider WFD catchment for Birk Lane Drain water body catchment water is within 1 km of the Order limits and so there is potential for hydrological connectivity to the watercourse via the drains and tributaries that extend into the Solar Farm.
Barmby Water Body (GB30430722) - Lake		The Barmby lake water body is located approximately 400 m from the Scheme boundary but will not be directly impacted by the Scheme. There are no watercourses,

Water Body (ID)	Screening Outcome	Justification
		drains, ditches, or other potential pathways between the Scheme and the Barmby lake water body. Despite hydrological connectivity to the Aire and Bik Lane Drain water bodies, it is anticipated that any water quality impacts related to construction runoff or spillages that have potential to enter these tributaries will be adequately mitigated by a Construction Environmental Management Plan (CEMP), which is secured under the DCO, and associated Water Management Plan (WMP) which is secured through the CEMP. The CEMP will be standard procedure for the Scheme and will describe the principles for the protection of the water environment during construction. The CEMP will be supported by the WMP (as an appendix to the CEMP), that will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction including requirements for water quality monitoring. Similarly, during decommissioning there would be a Decommissioning Environmental Management Plan (DEMP) in place. For outlines of these documents refer to the **Framework CEMP [EN010143/APP/7.7]** and **Framework DEMP [EN010143/APP/7.9]**. During operation, the majority of the Site would drain naturally via infiltration to ground and there would be no water quality risks relating to runoff of rainfall from the Solar PV Areas. However, a Framework Surface Water Drainage Strategy has been developed in consultation with the Ouse and Humber Drainage Board for Solar PV Parcel 1c which contains the two Grid Connection Substations and associated new areas of hardstanding. This area would not drain towards any of these waterbodies, and there is no requirement for operational outfalls to discharge runoff to watercourses for any part of the Scheme. There would be no operational runoff relating to the Grid Connection Corridor. Given this mitigation and the lack of any direct works to these waterbodies, it is considered that they can be screened out of further assessment.

Water Body (ID)	Screening Outcome	Justification
Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater	In	Activities relating to the construction and operation of the Scheme have been assessed in terms of their potential impact upon this groundwater water body. There are potential anticipated impacts at the water body scale, therefore assessment of impacts to groundwater is scoped in.
Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater		
East Riding Mercia Mudstone (GB40402 G990200) - Groundwater		

3.3 Screening of Activities

3.3.1 The Scheme comprises a number of activities that present a potential risk to the WFD status of the waterbodies identified in the previous section. The screening assessment of activities pertaining to the Scheme is provided in **Table 2**.

Table 2. Screening of Scheme Activities Against WFD Quality Elements.

Activity	Description	Screening Outcome	Justification
Solar PV panels and PV mounting structures which combine to form PV tables	Solar PV panels will be mounted on PV mounting structures. Minimum clearance above ground when the solar PV panels are at maximum tilt will be 1.0 m (except in areas of Flood Zone 3 where minimum clearance is determined in relation to flood risk requirements). This will avoid creation of an impermeable surface on the ground or the need for extensive earthworks. Infrastructure, including solar PV panels, will also be buffered from watercourses within the Solar PV Site by at least 10 m (and 30 m in the case of the River Ouse, River Derwent and unnamed drain (DE53) due to ecological requirements).	**Out** Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) - River Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater	There are no direct hydromorphological impacts to watercourses given the minimum 10 m buffer from solar PV tables or other infrastructure. The **Framework Surface Water Drainage Strategy, Appendix 9-4, ES Volume 2 [EN010143/APP/6.2]** indicates that as the Solar PV Panels will be tracking, they will not focus surface water in specific areas (no single drip track). The ground beneath the Solar PV Panels will be raked in line with contours to encourage the retention and infiltration of rainfall until vegetation is established, at which point raking would no longer be required. Maintenance visits will check for signs of developing flow paths and mitigate where necessary. There is no requirement to discharge runoff to surface watercourses. Following consultation with the Ouse and Humber Drainage Board it was concluded that only Solar PV Area 1c required a drainage strategy given it contains the two Grid Connection Substations, auxiliary equipment access roads, a small parking area and associated switchrooms and operations building. Surface water runoff from this area will have to be managed with flows reduced to the greenfield rate. Storage would be provided in three different sized attenuation storage areas across Solar PV Area 1c. ; these

Activity	Description	Screening Outcome	Justification
	Mounting poles will be driven into the ground to an indicative depth of 3 m to 5 m depending on local geology.	Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater East Riding Mercia Mudstone (GB40402 G990200) - Groundwater	are a form of Sustainable Drainage Systems (SuDS), providing a degree of treatment prior to infiltrating to the underlying groundwater. This is described further in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]** and the **Framework Surface Water Drainage Strategy, Appendix 9-4, ES Volume 2 [EN010143/APP/6.2]**. With regard to installation of the mounting poles, it is notable that a borehole in the Spaldington Golf Centre (of 45 m depth) identified clay and thin sand bands to 19 m, overlying sand and gravels, then Sandstone from 21.3 m below ground level to base at 45 m depth. The record includes pumping information, with no details of water strikes. From this information, it is likely that there will be areas of high groundwater levels in the superficial deposits in the areas where sands are encountered. Due to the thickness of overlying superficial deposits and the shallow depth of Scheme infrastructure, it is unlikely that groundwater in the bedrock aquifers will be encountered by the Scheme. Any potential water quality issues relating to construction runoff or spillages that have potential to enter tributaries will be mitigated by a Construction Environmental Management Plan (CEMP). A **Framework CEMP [EN010143/APP/7.7**] is presented with the DCO Application.
Field Station Units / Field Substations	Field Stations are areas of hardstanding that will house inverters, transformers, and	**Out**	Infrastructure will not be located within 10 m of a watercourse and so there is no mechanism for direct hydromorphological impacts to surface water bodies.

Activity	Description	Screening Outcome	Justification
	switchgear. There are currently three options for the delivery of the inverters, transformers and switchgear at the Field Stations which are fully described in **Table 2-1 of Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1].** .	Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) - River Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater East Riding Mercia Mudstone (GB40402 G990200) - Groundwater	The Field Stations will be hard standing comprising crushed stone/compacted gravel over geotextile. The electrical infrastructure will be in containerised units sat on foundations (typically concrete foundations (blocks or plinths), although other types of foundations may be used depending on the local geology or land quality). This will allow runoff to spread under the units, mitigating any impact from the structures. The Field Stations will also be located away from the edge of fields, allowing the surrounding land to further aid in mitigating any runoff. Given the above, there are considered no mechanisms for impacts to surface water bodies. Due to the thickness of overlying superficial deposits and the shallow depth of Scheme infrastructure, it is unlikely that groundwater in the bedrock aquifers will be encountered by any foundations created within the Field Stations. Given the self-contained /containerised nature of the electrical infrastructure there would not be expected to be any runoff of contaminants to ground. As such, there would be negligible or no impact to the groundwater body, particularly given the large scale of the WFD groundwater bodies.

Activity	Description	Screening Outcome	Justification
On-Site and Interconnecting Cables	Onsite Electrical Cabling is required to connect the Solar PV Panels to inverters and the inverters to the transformers onsite. These low voltage cables are all less than 1.0 kV. The dimension of the trenches will vary depending on the number of cables or ducts they contain but would typically be up to 0.8 m in width and between 0.6 and 0.8 m in depth. The medium voltage 33 kV Interconnecting Cables are required to transfer electricity between the transformers/switchgears at the Field Stations and the Grid Connection Substations. These cables will start within the Solar PV Areas (on-site) and extend between the Solar PV Areas (off-site) connecting them to one of the two Grid Connection Substations, as required. These cables will be buried underground. The width of the trenches will vary depending on the number of cables or ducts	**In** Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) - River Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater East Riding Mercia Mudstone (GB40402 G990200) - Groundwater **Out** Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River	Infrastructure will not be located within 10 m of a watercourse, except where watercourse crossings (for cables) are required. The crossings have the potential to impact channel hydromorphology, ecology and water quality. The mitigation requirements for the intrusive crossings will be determined by pre-works morphology survey of the channel of each watercourse to be crossed prior to construction. This is to ensure that there is a formal record of the condition of each watercourse prior to commencement of works. The survey is a precautionary measure so that should there be any unforeseen adverse impacts there is a record against which any remedial action can be determined. Water flow would be maintained by damming and over pumping during cable installation. Works should be carried out in the drier months where practicable as this would reduce the risk of pollution propagating downstream, particularly in the case of ephemeral watercourses. Once the watercourses are reinstated, silt fences, geotextile matting, or straw bales should be used initially to capture mobilised sediments until the watercourse has returned to a settled state. It will be a requirement that the watercourses are reinstated as found and water quality monitoring will be undertaken prior to, during, and following on from the construction activity. Regular observations of the watercourses will also be required post-works during vegetation re-establishment of the banks, especially following wet weather, to ensure that

Activity	Description	Screening Outcome	Justification
	they contain but are expected to be between 0.8 m and 2.0 m in width. Outside of the Solar PV Site, where cables are laid in agricultural land trench depth is typically 1.2 m to 1.4 m in depth to ensure cables are installed below typical plough depth; where they are laid in the highway (tarmac) trench depth varies depending on road/subsoil conditions, but is generally between 0.6 m to 1.4 m. Trenches internal to the Solar PV Site can be shallower (as there will be no ploughing during the operation of the solar farm) with typical trench depths of 0.8 m. Trench depths may increase at crossings for example at or on the approach to open trenched watercourse crossings, or if obstacles such as buried utilities are encountered in which case trenches would be deeper to		no adverse impacts have occurred. These requirements will be described in further detail in the Water Management Plan (WMP). This will be a document produced post-consent as secured through the **Framework CEMP [EN010143/APP/7.7].** It will outline all water related mitigation and monitoring requirements. Featherbed Drain (which forms the boundary between Solar PV Areas 2f and 2g) will be crossed by HDD but would not be directly impacted with send and receive pits at least 10 m from the channel margins. Cables would be installed a minimum of 1.5 m below the channel bed. The potential for drilling fluids to break out into the watercourse would be mitigated by a site specific hydraulic fracture risk assessment to be prepared post-consent and informed by ground investigation, as secured through the DCO. Due to the thickness of overlying superficial deposits and the shallow depth of Scheme infrastructure, it is unlikely that groundwater in the bedrock aquifers will be encountered by the Scheme, but there may be potential to encounter superficial groundwater and the cable routes beneath watercourses are anticipated to be below the water table over part of their routes. However, the profile of the cable ducting is considered to be small compared to the spatial and vertical extent of the aquifers. Furthermore, given that cable trenches will generally have a relatively shallow depth of 1.4 m, a negligible impact on groundwater flow is predicted from installation of the Interconnecting Cables overall. As such, there would be negligible or no

Activity	Description	Screening Outcome	Justification
	avoid the obstacle by set clearance limits. The Interconnecting Cables will require a maximum working corridor width of 30 m (to contain all soil, spoil, and vehicle movements etc.) The Interconnecting Cables will typically be installed using an open trench method, except some watercourses which will be crossed by trenchless techniques. Trenchless crossings will likely be undertaken using Horizontal Directional Drilling (HDD).		impact to the groundwater body, particularly given the large scale of the WFD groundwater bodies.
Grid Connection Substations	The Grid Connection Substations are located in Solar PV Area 1c. They receive the electricity from Field Stations and step up the voltage from 33 kV to 132 kV ready to be exported to National Grid Drax Substation via the 132 kV Grid Connection Cables. The footprint for each of the Grid Connection Substation compounds is estimated to be up to 60 m by	**Out** Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River	There are no watercourses or drains in proximity to Solar PV Area 1c, therefore infrastructure will not be located within 10 m of a watercourse, and there are no mechanisms for hydromorphological impacts to surface water bodies. The surface water drainage requirements for the Grid Connection Substations are presented in the **Framework Surface Water Drainage Strategy, Appendix 9-4, ES Volume 2 [EN010143/APP/6.2]**. As agreed with the Ouse and Humber Drainage Board, surface water runoff from this area will have to be managed with flows reduced to the greenfield rate. Storage would be provided in three attenuation channels alongside the Substations. These are

Activity	Description	Screening Outcome	Justification
	100 m and collectively, the footprint of both compounds plus the shared operations building and access roads is estimated to be 160 m by 100 m.	Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) - River Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater East Riding Mercia Mudstone (GB40402 G990200) - Groundwater	a form of SuDS, providing a degree of treatment prior to infiltrating to the underlying groundwater. A detailed Surface Water Drainage Strategy, informed by infiltration testing, will be developed post-consent as a requirement of the DCO, ensuring no risk to the underlying groundwater body. Due to the thickness of overlying superficial deposits and the shallow depth of Scheme infrastructure, it is unlikely that groundwater in the bedrock aquifers will be encountered during construction of the Scheme but there may be potential to encounter superficial groundwater. However, given the relatively shallow depth of foundations (1 to 2 m), there would be negligible impact to the groundwater body, particularly given the large scale of the WFD groundwater bodies.
Electricity Export Connection to National Grid (Grid Connection Corridor)	The Scheme will be connected to the national grid via the National Grid Drax Substation by the Grid Connection Cables. The electricity will be exported via two 132 kV circuits. Each circuit may comprise up to three cables. An earth cable and a fibre optic cable may also be laid alongside the 132 kV cables. The underground Grid Connection Cables will be typically installed using an	**In** Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) – River	There is potential for direct hydromorphological impacts to the channel and riparian zone if intrusive open cut installation methods are proposed. The River Derwent, River Ouse, drain DE53 and Loftsome Bridge Drain will be crossed by HDD, but would not be directly impacted with send and receive pits at least 10 m from the channel margins (or 16 m from the landward toe of flood defences). Cables will be installed a minimum of 5 m below the river bed for the River Ouse and River Derwent, and at least 1.5 m below the bed for drain DE53 and Loftsome Bridge Drain. There is potential for indirect impacts to all watercourses to be crossed from uncontrolled release of construction site runoff that may include high levels of fine sediment, oils and

Activity	Description	Screening Outcome	Justification
	open trench method requiring a maximum 30 m working corridor, with trench widths approximately 1.5 m wide and 1.2 m to 1.4 m deep. At certain locations (see Chapter 2: The Scheme of this ES), trenchless methods of cable installation will be used (HDD).	Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater East Riding Mercia Mudstone (GB40402 G990200) - Groundwater	drilling muds (water based) if this runoff is not carefully managed. There are potential impacts from groundwater ingress to excavations (e.g. send, receive and jointing pits) and the risk of 'break out' of drilling muds into watercourses associated with HDD. The potential for drilling fluids to break out into the watercourse would be mitigated by a site-specific hydraulic fracture risk assessment to be prepared post-consent and informed by ground investigation as secured through the DCO. Mitigation for the intrusive crossings is proposed to include a pre-works morphology survey of the channel of each watercourse to be crossed prior to construction. This is to ensure that there is a formal record of the condition of each watercourse prior to commencement of works. The survey is a precautionary measure so that should there be any unforeseen adverse impacts there is a record against which any remedial action can be determined. Water flow would be maintained by damming and over pumping during cable installation. Works should be carried out in the drier months where practicable as this would reduce the risk of pollution propagating downstream, particularly in the case of ephemeral watercourses. Once the watercourses are reinstated, silt fences, geotextile matting or straw bales should be used initially to capture mobilised sediments until the watercourse has returned to a settled state. It will be a requirement that the watercourses are reinstated as found and water quality monitoring will be undertaken prior to, during, and following on from the construction activity. Regular observations of the watercourses will also be required post-works during vegetation re-establishment of

Activity	Description	Screening Outcome	Justification
			the banks, especially following wet weather, to ensure that no adverse impacts have occurred. These requirements will be described in the WMP to be prepared post-consent as secured through the **Framework CEMP [EN010143/APP/7.7]**. The 11 locations where the Grid Connection Cables cross watercourses are listed in **Table 9-16 ES Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1].** The locations and methodologies are indicative and subject to change at detailed design. This activity is screened in for further consideration in terms of the WFD compliance. Due to the thickness of overlying superficial deposits and the shallow depth of Scheme infrastructure, it is unlikely that groundwater in the bedrock aquifers will be encountered by the Scheme although some groundwater could be encountered in the superficial deposits. However, the profile of the cable ducting is considered to be small compared to the spatial and vertical extent of the aquifers. Furthermore, given that cable trenches will generally have a relatively shallow depth (although slightly deeper at crossing locations), a negligible impact on groundwater flow is predicted from installation of the Grid Connection Cable overall. As such, there would be negligible or no impact to the groundwater body, particularly given the large scale of the WFD groundwater bodies.

Activity	Description	Screening Outcome	Justification
Offices, welfare and storage	The existing derelict brick farmhouse building at Johnson's Farm in the north-east of the Solar PV Site (Solar PV Area 1e) will be demolished and a new structure erected within the same footprint to provide office accommodation and welfare facilities. This will be undertaken early in the construction process so that if practicable the facilities are available for part of the construction period as well as operation. As it is unsafe, the dilapidated single storey brick barn in the west of the Johnson's Farm site will also be demolished and may be rebuilt. The two existing modern agricultural buildings (barns) will be used for storage.	**Out** Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) - River Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater East Riding Mercia Mudstone (GB40402 G990200) - Groundwater	Infrastructure will not be located within 10 m of a watercourse, and so there are no mechanisms for hydromorphological impacts to surface water bodies. The operations and maintenance hub at Johnson's Farm will be a small administration area that will be rebuilt on the existing building footprint. No change in the current behaviour of the site is expected. This is generally flat and surrounded by fields that will hold solar panels (to the west) or be retained as land for habitat enhancement (to the east), see **Figure 2-3, ES Volume 3 [EN010143/APP/6.3].** Foul drainage will be managed by a septic tank system and will be regularly emptied for disposal off-site by a licensed contractor. Any potential water quality issues relating to construction or demolition runoff or spillages that have potential to enter tributaries will be mitigated by the CEMP and DEMP (**Framework CEMP [EN010143/APP/7.7]** and **Framework DEMP [EN010143/APP/7.9]**). Given the above mitigation, there are considered to be no mechanisms for impacts to surface water bodies. Due to the thickness of overlying superficial deposits and the shallow depth of Scheme infrastructure, it is unlikely that groundwater in the bedrock aquifers will be encountered by the Scheme. While there may be some potential to encounter superficial groundwater, given the limited extent of excavation for foundations anticipated (1 to 2 m) there would be negligible impact to the groundwater body, particularly given the large scale of the WFD groundwater bodies.

Activity	Description	Screening Outcome	Justification
Fencing and Security	The Solar PV Site Perimeter Fence will enclose the operational areas of the Solar PV Site. Public rights of way (PRoW) that cross the Solar PV Site will be preserved with the fence installed either side of them. The fence will be a stock proof mesh-type security fence with wooden posts, at a maximum height of 2.2 m. Pole mounted closed-circuit television (CCTV) systems will be deployed around the perimeter of the operational areas of the Solar PV Site. It is anticipated that cameras would be mounted at approximately 2.5 m high.	**Out** Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) - River Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater East Riding Mercia Mudstone (GB40402 G990200) - Groundwater	Infrastructure will not be located within 10 m of a watercourse, and so there are no mechanisms for hydromorphological impacts to surface water bodies. While there may be some potential to encounter superficial groundwater, given the limited extent of below ground works and their discrete nature, it is anticipated there would be negligible impact to the groundwater body, particularly given the large scale of the WFD groundwater bodies. Any potential water quality issues relating to construction runoff or spillages that have potential to enter tributaries will be mitigated through the detailed CEMP (**Framework CEMP [EN010143/APP/7.7]**).

Activity	Description	Screening Outcome	Justification
Drainage	The panels will be tracking and the ground will be raked in line with contours.. Field stations will consist of up to four shipping containers, founded on ground screw piles or strip footings, sitting above ground with gravel or aggregate underneath.. The operations and maintenance hub at Johnson's Farm will be a small administration area that will rebuild on the existing building footprint. No change in the current behaviour of the site is expected. The two Grid Connection Substations will be contained in a single field (Solar PV Area 1c) and will consist of hardstanding, access roads, a small parking area and several small kiosk buildings. Surface water runoff from this field will have to be managed with flows reduced to the greenfield rate.	**Out** Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) – River Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) – River Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) – River Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) – River Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) – Groundwater Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater East Riding Mercia Mudstone (GB40402 G990200) – Groundwater	Tracking panels mean that they will therefore not focus surface water in specific areas (no single drip track). Round raking in line with contours will encourage the retention and infiltration of rainfall until vegetation is established. Maintenance visits will check for signs of developing flow paths and mitigate where necessary. For these reasons, the panels do not need to be considered further in the drainage strategy. Field Stations will be permeable gravel/stone over geotextile and the structures within them will be placed on foundations that will allow runoff to spread underneath, mitigating an impact from the structures. The Field Stations will also be located away from the edge of fields where practicable, allowing the surrounding land to further aid in mitigating any runoff. Therefore, the Field Stations do not need to be considered further in the drainage strategy. The operations and maintenance hub at Johnson's Farm is generally flat and surrounded by fields that will hold solar panels (to the west) or land to be retained as land for habitat enhancement (grassland) to the east. Foul drainage will be managed by a septic tank system. For these reasons, Johnson's Farm does not need to be considered further in the drainage strategy. The **Framework Surface Water Drainage Strategy, Appendix 9-4, ES Volume 2 [EN010143/APP/6.2]** sets out how surface water runoff in Solar PV Area 1c will be managed. This will be achieved through attenuation storage methods. A maximum required storage volume of 750 m^3 is

Activity	Description	Screening Outcome	Justification
			required. This will be achieved with three different sized attenuation storage areas across Solar PV Area 1c. .
Access Tracks	New or upgraded internal access tracks will be constructed across the Solar PV Site. These would typically be 6 m wide compacted stone tracks (Type 1 aggregate) over appropriate geotextile with gradient slopes (where required). They will adhere to the appropriate 10 m buffer from watercourses except where crossings are required. The Scheme layout has been designed to avoid new drainage ditch and watercourse crossings wherever practicable. Existing crossings will be used where feasible. Where a new drainage ditch crossing is required, an open span bridge crossing will be used, with the specific type of crossing selected being determined based on site specific factors and in consultation with the relevant authority (generally the Internal Drainage Board	**Out** Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) Foulness from Black Beck to Market Weighton Canal (GB104026066690) Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) Derwent Sherwood Sandstone (GB40401 G700600)	The Scheme layout has been designed to avoid new drainage ditch and watercourse crossings wherever practicable. A total of 24 required crossings within the Solar PV Site have been identified for access tracks, and of these eight are new crossings. Where extensions to existing culverts are required, they will be a maximum of 2 m additional width and will be designed appropriately to maintain connectivity along watercourses for aquatic species and riparian mammals, where these are shown to be present. Where practicable, culverts extensions and any improved structure will be set 150 mm below bed level to allow sedimentation and a naturalised bed to form, which will maintain longitudinal connectivity for aquatic fauna. Length-for-length equivalent watercourse enhancements are required for each new culvert extension, and to ensure compliance against WFD objectives. The requirements will be outlined in a WFD Mitigation and Enhancement Strategy (to be produced post consent in accordance with a requirement of the DCO secured via the CEMP). The affected agricultural ditches are generally ephemeral/intermittently flowing. Nevertheless, when flowing the potential for adverse water quality impacts exists from runoff containing fine sediments and chemical spillages relating to use of plant adjacent to the watercourses, and structural works to install crossings in

Activity	Description	Screening Outcome	Justification
	(IDB)/Lead Local Flood Authorities (LLFA) for the Solar PV Site). There would be no new culverts as part of the Scheme, but exiting culverts may be extended by up to 2 m. Tracks will be permeable, and localised SuDS, such as swales and infiltration trenches, will be used to control runoff.	East Riding Mercia Mudstone (GB40402 G990200)	the riparian margins and over the watercourses. Given the limited potential for conveyance in these generally dry watercourses, any impact would be expected to remain very localised. Where practicable, works would be timed to coincide with drier periods. In addition, best practice measures as outlined in the CEMP and WMP (**Framework CEMP [EN010143/APP/7.7]**) would minimise any adverse water quality impacts to these ditches. There is limited potential for impacts to the groundwater body, as no significant changes in runoff patterns compared to existing are expected from the internal access tracks.

3.4 WFD Scoping

3.4.1 The WFD scoping stage defines the level of detail required for further WFD assessment. This includes identifying risks to the WFD receptors from the Scheme's activities. The scoping stage assessment is presented in **Table 3**.

Table 3. Scoping of the Scheme's Activities Against WFD Quality Elements.

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Justification	Scoping Outcome (In/Out)
Biological Quality Elements			
Fish	Yes	Non-intrusive crossings of water bodies may result in a spillage of drilling fluids or pollutants, which have the potential to impact fish populations during the construction phase. Temporary blockages in longitudinal connectivity from intrusive crossing methods of water bodies. Potential for loss of biological continuity	In

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Justification	Scoping Outcome (In/Out)
		resulting in interference with fish population movements and blocking the exchange of individuals among populations, reducing gene flow and disrupting the ability of 'source' populations to support declining populations nearby. Potential direct impact on fish populations from disturbance of the bed and / or release of contaminated construction site runoff, including the risk of 'break out' during HDD operations. Depending on the height of the open span crossings it may cause shading that is anticipated to impact these quality elements. Access tracks created through culverting or culvert extension may create barriers to the longitudinal connectivity of watercourses which will affect the biological continuity of fish populations and disrupt present habitat conditions.	
Invertebrates	Yes	Non-intrusive crossings of water bodies may result in a spillage of drilling fluids or pollutants, which have the potential to impact invertebrate populations during the construction phase. Intrusive crossings of water bodies may cause direct mortality of invertebrates or the smothering of habitat with fine sediment. Depending on the height of the open span crossings these may cause shading that is anticipated to impact these quality elements. Access tracks created through culvert extension may cause loss of invertebrate habitat, as well as direct harm and mortality to invertebrate populations during the installation of the culverts.	In
Macrophytes and Phytobenthos Combined	Yes	Non-intrusive crossings may result in a spillage of drilling fluids or pollutants, which have the potential to impact Macrophytes and Phytobenthos populations during the construction phase. Depending on the height of the open span crossings these may cause shading that is anticipated to impact these quality elements. Access tracks created	In

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Justification	Scoping Outcome (In/Out)
		through culvert extension may cause loss of macrophyte habitat, as well as direct harm and mortality to macrophyte populations during the installation of the culverts. Intrusive crossings of water bodies may cause the removal of macrophytes, and removal of the bed or macrophytes supporting phytobenthos.	
Physico-Chemical Quality Elements			
Thermal conditions	No	Non-intrusive (HDD) crossings could alter the level of shading to water bodies following potential riparian vegetation removal, however this is unlikely to result in a notable change in shading or associated change in water temperature given send and receive pits will be located at least 10 m from the water body. Access tracks created through culvert extension or temporary open-span bridges would cause localised shading of the watercourse but would be negligible compared to the length of the WFD water body. Therefore, it would not affect the WFD status. Intrusive crossings of water bodies may result in riparian vegetation removal, yet this will only be at a very local scale and would not alter the water body temperature.	Out
Oxygenation conditions	Yes	Non-intrusive and intrusive cable crossings, and watercourse crossings for site access may increase sediment and organic material entry into watercourses. Culverts may also influence oxygenation by alteration of flow conditions and pathways, though this is unlikely to have a significant effect on the WFD status of this quality element due its localised nature.	In

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Justification	Scoping Outcome (In/Out)
Salinity	No	No materials that may alter the salinity of the watercourses are known to be proposed for use in the Scheme.	Out
Acidification status	No	No materials that may alter the pH of water bodies are known to be proposed for use in the Scheme. The CEMP and WMP will specify measures to manage the spillage risk of chemicals used in construction.	Out
Nutrient conditions	Yes	Non-intrusive, intrusive cable crossings, and watercourse crossings for site access may increase sediment loads to watercourses and organic material from site clearance works.	In
Hydromorphological Quality Elements			
Quantity and dynamics of water flow	No	There is no mechanism for either cable crossing method to impact this element; intrusive crossings and watercourse crossings for site access will preferably be carried out during dry periods or maintain water body flow by installation of a pipe or flume or by over-pumping the flow for the relatively short duration of the works.	Out
Connection to groundwater bodies	No	Cables will cross beneath water bodies and other infrastructure, but this should not impact connectivity to groundwater bodies due to the small scale of activity compared to water body size. Watercourse crossings for site access may also present a barrier to connection with groundwater bodies, but this will be extremely localised and would not present an impact at the water body scale.	Out
River continuity	Yes	Intrusive crossings will present a temporary blockage to continuity whilst excavation takes place. Watercourse crossings for site access can also interrupt river continuity for the duration of their use. The worst-case	In

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Justification	Scoping Outcome (In/Out)
		scenario for culvert extensions will be 2 m. There is no mechanism for non-intrusive crossings to affect this quality element.	
River depth and width variation	Yes	Intrusive crossings may lead to local changes in channel profile to impact this element. Watercourse crossings for site access would also impact this element locally by their uniform, unchangeable nature.	In
Structure and substrate of the riverbed	Yes	Intrusive crossings may lead to local changes in bed substrate to impact this element. Watercourse crossings for site access can present an interruption to the natural bed substrate. The worst-case scenario for culvert extensions will be 2 m.	In
Structure of the riparian zone	Yes	Intrusive crossings will involve digging below the watercourse bed, which will inevitably involve disruption of the watercourse banks and the riparian zone as they will be temporarily removed before being reinstated. Non-intrusive crossings will also involve excavations each side of riverbanks, but these will be set back by a minimum of 10 m from the normal flow channel/water's edge. Watercourse crossings for site access can locally disconnect the river channel from the riparian zone. The worst-case scenario for culvert extensions will be 2 m.	In
Groundwater Quality Elements			
Quantitative Elements	Yes	There are potential impacts from groundwater ingress to excavations for non-intrusive crossings on certain water bodies. There are potential impacts to groundwater as elements of the Scheme's drainage strategy discharge to ground.	In

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Justification	Scoping Outcome (In/Out)
Chemical Elements	Yes	There are potential impacts from groundwater ingress to excavations for non-intrusive crossings. There are potential impacts to groundwater quality as elements of the Scheme's drainage strategy discharge to ground.	In

4. Baseline

4.1 General Characteristics

Topography and Land Use

4.1.1 The topography of the Study Area is generally flat, with elevation ranging from around 8 m above ordnance datum (AOD) to 3 m AOD. The lower elevations are mostly associated with the River Ouse and its floodplain.

4.1.2 The land use within the Study Area, shown in **Figure 9-1: Surface Water Features and their Attributes, ES Volume 3 [EN010143/APP/6.3],** generally consists of a mosaic of arable farmland, with some areas of pasture, interspersed with individual trees, hedgerows, tree belts (linear) small woodland blocks and farm access tracks. There is an industrial development to the west of Drax village that consists of Drax Power Station and the National Grid Drax Substation complex. Drainage ditches and small watercourses are ubiquitous across the area and are generally heavily modified or artificial in nature as a result of the surrounding agricultural and drainage practices (**Figure 9-2, ES Volume 3 [EN010143/APP/6.3])**. There are several villages and hamlets located throughout the Study Area. Towards the middle of the Study Area is the village of Spaldington, and toward the north of the Scheme area is the village of Willitoft and the hamlet of Gribthorpe. See also **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**.

4.1.3 The Grid Connection Corridor connects the Grid Connection Substations in Solar PV Area 1c to the National Grid Drax Substation to the south-west and intersects the River Ouse and the River Derwent. The villages of Drax and Barmby on the Marsh are situated to the east of the Grid Connection Corridor.

Geology and Soils

4.1.4 The BGS Geoindex indicates that the underlying bedrock at the Scheme comprises (Ref. 8):

a. Sherwood Sandstone Group - Sandstone. Sedimentary bedrock formed between 272.3 and 237 million years ago during the Permian and Triassic periods; and

b. Mercia Mudstone Group - Mudstone. Sedimentary bedrock formed between 252.2 and 201.3 million years ago during the Triassic period.

4.1.5 The Scheme is underlaid by various superficial geology (Ref. 8), which are detailed below:

a. Hemingbrough Glaciolacustrine Formation - Clay, silty. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period;

b. Warp - Clay and silt. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period;

c. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period;

d. Thorganby Clay Member - Clay, silty. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period; and

e. Breighton Sand Formation - Sand. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.

4.1.6 Soil composition (Ref. 9) indicates that the natural, undisturbed soils in the Study Area should be generally a mix of:

a. Loamy and clayey soils of coastal flats with naturally high groundwater which are naturally characterised by wet brackish coastal flood meadows;

b. Freely draining slightly acid sandy soils which are naturally characterised by acid dry pastures; acid deciduous and coniferous woodland; and potential for lowland heath; and

c. Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils that are naturally characterised by seasonally wet pastures and woodlands.

4.1.7 More detail regarding soils can be found in **ES Chapter 15: Soils and Agricultural Land, ES Volume 1 [EN010143/APP/6.1]**.

Hydrology

4.1.8 There are no National River Flow Archive (NRFA) monitoring sites within the Study Area (Ref. 11). However, there are upstream gauging stations for the River Ouse, River Derwent and River Foulness on the Environment Agency's Hydrology Data Explorer (Ref. 13).

4.1.9 The nearest monitoring point for the River Ouse is at Skelton (Station 27009, approximate NGR SE 56845 55373) (Ref. 14), over 90 km upstream of the Order limits. This monitoring location shows a mean daily flow of 52.13 m^3/sec and Q95 flow of 7.81 m^3/sec. Whilst this gauging station is located a long way upstream, it demonstrates the size and scale of the River Ouse. Within the Study Area the river is tidal. The National Tidal Limit (NTL) for the River Ouse is 14 miles upstream from the confluence with the River Derwent at Naburn Lock. The river is navigable throughout its length.

4.1.10 The nearest gauging point for the River Derwent is at Buttercrambe (Station 27041, approximate NGR SE 73112 58712) (Ref. 15), approximately 22 km from the northern boundary of the Order limits and shows a mean daily flow of 16.989 m^3/sec and Q95 flow of 4.41 m^3/sec.

4.1.11 While the River Derwent in the Study Area would naturally be tidal, water from the tidal River Ouse is prevented from entering the River Derwent by the Barmby Barrage. This was built in the 1970s as water is abstracted at Loftsome Bridge Wastewater Treatment Works (WwTW). The barrage prevents water from the Ouse reaching the Derwent, maintains a depth of

water for navigation and abstraction, and keeps the river at a low enough level to allow drainage from surrounding land.

4.1.12 For the River Foulness, the nearest monitoring point is at Holme House Farm (Station 26012, approximate NGR SE 77976 37277) (Ref. 16). This is approximately 1.25 km from the northern boundary of the Ecology Mitigation Area. This monitoring point shows a mean daily flow of 1.2 m^3/sec and Q95 flow of 0.041 m^3/sec.

4.1.13 There are no Met Office monitoring locations within the Study Area or within any of the waterbody catchments (Ref. 12). The nearest Meteorological Office weather station is located at Leconfield Sar (NGR TA 0125 4360), approximately 28 km north-east of the village of Spaldington, based on data from the Meteorological Office website. The weather station for the period 1991–2020 receives approximately 661 mm of rainfall per annum, with it raining more than 1 mm on approximately 124 days per year, which are both low in the UK context. Rainfall is highest from early Summer through to mid-Winter and generally peaks in June, October, and November, with the least rainfall falling in March on average.

Historical Channel Change

4.1.14 Analysis of historic mapping from the late 19th century shows that there have been only minor adjustments to channel planform of WFD monitored watercourses over the past century (Ref. 7). However, this is thought to be a result of significant modification prior to the advent of available mapping rather than a reflection of a natural and unmodified area as the watercourses in question are clearly straightened, and artificial in places.

4.2 WFD Status

WFD Status – Surface Water

4.2.1 The Study Area falls within six WFD surface water body catchments, of which four are screened in. Further details regarding the WFD classifications of the screened in water bodies are given in **Table 4** (Ref. 2). The current data are Cycle 3 that were published in 2022, however, Cycle 2 data is being used for chemical status as updated chemical status has not yet been included within Cycle 3 WFD classifications for these waterbodies. There are also several tributaries of these water bodies present within the Study Area; these are predominantly unnamed agricultural ditches, drains, and springs (see **Figure 9-2 Drain Names, ES Volume 3 [EN010143/APP/6.3]**).

Table 4. Summary of the WFD Status of the Screened-In WFD Surface Water Bodies.

WFD Parameter	Status / Summary			
Water Body ID	GB104027064270	GB104027068311	GB104027063630	GB104026066690
Water Body Name	Ouse from R Wharfe to Upper Humber	Derwent from Elvington Beck to River Ouse	Fleet Dike catch (trib of Ouse)	Foulness from Black Beck to Market Weighton Canal
Water Body Type	River	River	River	River
Water Body Area (m)	87779891.37	64294052.21	13007800.98	201696132.54
Water Body Length (m)	119338.48	132935.19	24719.81	154992.96
Hydromorphological Designation	Heavily modified	Heavily modified	Artificial	Not designated artificial or heavily modified
Overall Ecological Status	Moderate	Moderate	Moderate	Poor
Current Overall Status	Moderate	Moderate	Moderate	Poor
Status Objective	Good by 2027	Good by 2027	Good by 2027	Good by 2027
Biological Quality Elements	Not assessed	High	Moderate	Poor
Physico-chemical Quality Elements	Moderate	Moderate	Moderate	Good

WFD Parameter	Status / Summary			
Hydromorphological Quality Elements	Supports Good	Not assessed	Supports Good	Supports Good
Chemical	Fail	Fail	Fail	Fail

WFD Status – Groundwater

4.2.2 The Scheme is underlain by three groundwater bodies which is screened in (Ref. 2). A summary of the WFD status of the water body is given in **Table 5**.

Table 5. Summary of the WFD Status of the Screened -In WFD Groundwater Bodies.

WFD Parameter	Status / Summary		
Water Body ID	GB40401G702400	GB40401G700600	GB40402G990200
Water Body Name	Wharfe & Lower Ouse Sherwood Sandstone	Derwent Sherwood Sandstone	East Riding Mercia Mudstone
Water Body Type	Groundwater	Groundwater	Groundwater
Chemical (GW)	Poor	Poor	Poor
Chemical Dependent Surface Water Body Status	Good	Good	Good
Chemical Drinking Water Protected Area	Poor	Good	Good
Chemical Groundwater. Dependent Terrestrial Ecosystems (GWDTE) test	Good	Good	Poor

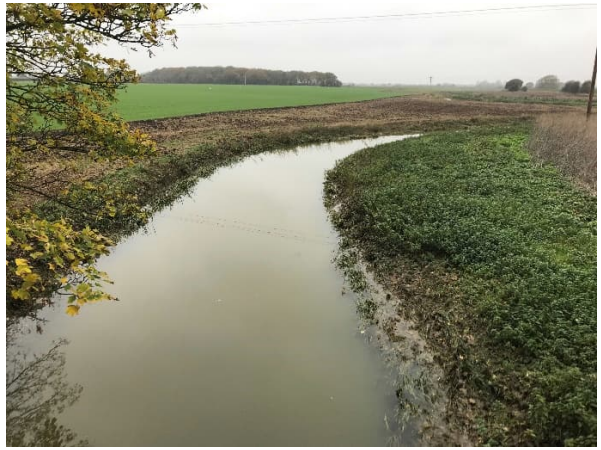
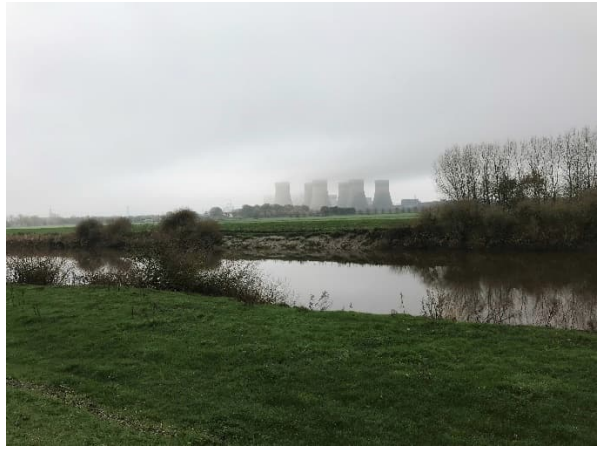
WFD Parameter	Status / Summary		
Chemical Saline Intrusion	Good	Good	Good
Chemical Status element	Poor	Poor	Poor
General Chemical Test	Good	Poor	Good
Overall Water Body	Poor	Poor	Poor
Prevent and Limit Objective	Active	Active	Active
Quantitative	Good	Good	Poor
Quantitative Dependent Surface Water Body Status	Good	Good	Poor
Quantitative GWDTEs test	Good	Good	Good
Quantitative Saline Intrusion	Poor	Good	Good
Quantitative Status element	Good	Good	Poor
Quantitative Water Balance	Good	Good	Good

4.3 Baseline Characteristics Against WFD Quality Elements

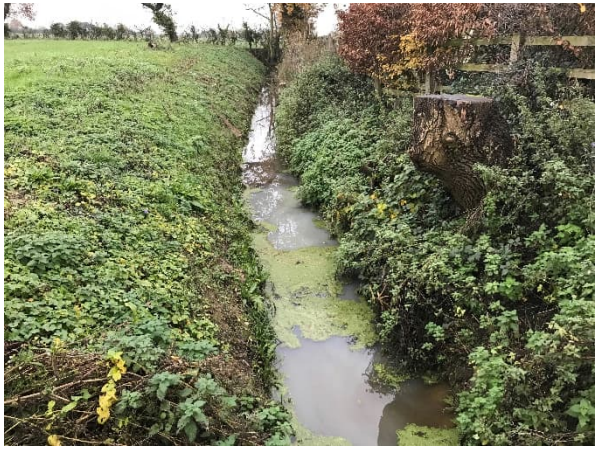
Hydromorphological Quality Elements

4.3.1 As discussed, a site walkover was conducted on the 30 November 2022, in part to assess the hydromorphological condition and quality of watercourses set to be crossed by the Grid Connection Corridor. The findings of this are summarised in **Table 6**.

Table 6. Summary of the hydromorphological characteristic of watercourses within the study area.

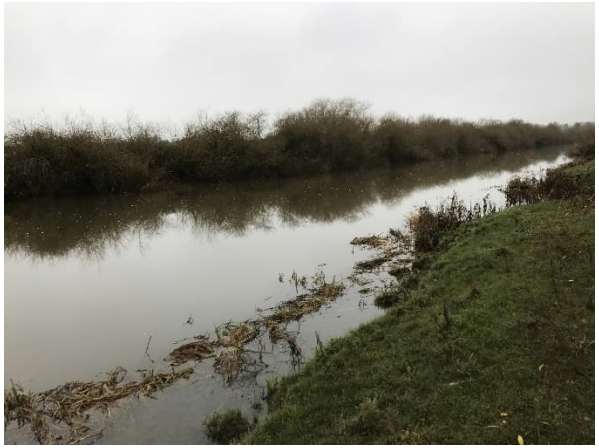
Watercourse	Hydromorphological Description
River Foulness 	The River Foulness was observed at the existing road crossing at Welham Bridge, where it appeared to exhibit a passive meandering typology. Bed material could not be observed due to high turbidity, but it is assumed to consist mainly of finer sediment, owing to the low-energy nature of the watercourse and the adjacent agricultural land use. The banks were vegetated with taller herbs, grasses, and scrub, occasionally interspersed with trees.
River Ouse 	Through the Study Area, the River Ouse exhibits a passive meandering typology and is situated within a wide, open valley. Embankments of approximately 1 metre in height are present on both sides of the river, set back approximately 4 metres from the bank tops, thereby disconnecting the river from the floodplain. Drainage channels are common across the floodplain. Adjacent land use is predominantly agricultural, although the riparian zone comprises a strip of grassland that includes the embankments. Bed substrate could not be observed during the survey due to high turbidity; however, it is assumed to be dominated by fine material due to the low energy and tidal nature of the river in this stretch. The river has been historically modified for navigation, with numerous canals and docks connected via locks altering the natural flow regime. Historic modifications have left the river largely devoid of morphological diversity. The river is tidal throughout the Study Area upstream to Naburn and is navigable along its entire length.

Fleet Dike



Fleet Dike was observed at the existing Willitoft Road crossing. The watercourse appeared to consist of a straight, artificially or heavily modified channel with sluggish or imperceptible flow. The channel exhibited steep banks that were vegetated with short grasses, and occasional lone trees were found on the left bank. The bed substrate appeared to be silty, and high turbidity suggested the presence of fine sediment. The adjacent land use consisted of agricultural fields, which likely contributed significantly to the input of fine sediment. Upstream of the crossing, there was observable algal growth, indicating the presence of nutrient input.

River Derwent



Flow in the River Derwent is almost exclusively of a "glide" flow type, with the majority of reaches displaying deep, slow-flow patterns. The River Derwent shares a similar landscape with the River Ouse within the Study Area, as it is situated in a wide-open valley surrounded by agricultural land. Additionally, embankments are found on both sides of the river, disconnecting it from the floodplain. Flow in the river is regulated by the Barmby Tidal Barrage, located at its confluence with the River Ouse. This tidal barrage manages the flow from the River Derwent into the River Ouse and prevents tidal water from the River Ouse from entering the River Derwent. Although bed substrate could not be observed during the survey, it was assumed to consist of fine material due to the river's low-energy nature and the presence of the impounding Barmby Tidal Barrage. The river, for the most part, lacked morphological diversity; however, some berms were identified on the right bank, providing localised variations in flow and marginal habitat.

Biological Quality Elements

4.4.1 An **Aquatic Ecology Baseline Report** (**Appendix 8-2, ES Volume 2 [EN10143/APP/6.2]**) has been compiled for the Scheme. This provides an overview of any protected, notable or invasive species of aquatic macroinvertebrates, macrophytes and fish within the Study Area based on desk study and site survey. A summary is provided below but refer to **Appendix 8-2** for full details.

4.4.2 The aquatic ecology desk study indicates that the Humber Estuary is a nationally important for river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus* are both present as a qualifying feature in the Humber Estuary SAC designation. Habitats Directive Annex II and V species Allis shad *Alosa alosa* is as being present in the River Ouse. European eel *Anguilla Anguilla* has been identified within 2 km of the Study Area.

4.4.3 Annex II species European bullhead *Cottus gobio* has been recorded within the River Foulness within 2 km of the Study Area.

4.4.4 Notable macroinvertebrate species were identified in surveys as described. Additionally, there are notable macroinvertebrates which may be present in the Study Area. These include *Acilius canaliculatus*, *Agabus labiatus*, *Helophorus strigifrons* and *Dryops auriculatus*. The rare Depressed River mussel *Pseudanodonta complanate* is likely to be present upstream of the Study Area between Low Hutton and Barmby Tidal Barrage on the River Ouse.

4.4.5 White-clawed crayfish may be present within the Study Area, as they are listed in the citation of the River Derwent Special Area of Conservation (SAC). However, there are no records of the species within 2 km of the Order limits within the last ten years, nor within 10 km of the Study Area. There are more recent records of American signal crayfish *Pacifastacus leniusculus* in the area (in 2017 at River Wharfe and grid reference SE524405).

4.4.6 The tasteless water pepper *Persicaria mitis*, pillwort *Pilularia globulifera* and greater water-parsnip *Sium latifolium* may be present within 2 km of the Study Area. The only notable macrophyte species identified in the desk study as specific records is the protected tubular water-dropwort *Oenanthe fistulosa*.

4.4.7 The macrophyte surveys identified the Invasive Non-Native Species (INNS) species Nuttall's waterweed *Elodea nuttallii* within the Study Area.

4.4.8 Several other INNS were identified in the desk study. 167 records of the highly invasive demon shrimp *Dikerogammarus haemobaphes* were noted within the last ten years. Species identified on the Wildlife and Countryside Act 1981 (Schedule 9) include Himalayan balsam *Impatiens glandulifera* and Nuttall's waterweed. Amphipod *Gammarus tigrinus* was also identified. The non-native but non-invasive shrimp *Crangonyx pseudogracilis/floridanus* and the New Zealand mud snail *Potamopyrgus antipodarum* were also recorded.

Physico-chemical Quality Elements

4.4.9 Water quality sampling of the River Derwent – River Ouse confluence (Sampling ID NE-49600301) was conducted by the Environment Agency at

Grid reference 468052 428566 (Ref. 17), a site c.450 m downstream from the proposed crossing site of the River Ouse. The sampling site is situated within the Ouse from R Wharfe to Upper Humber (GB104027064270) water body. Analysis has been conducted on samples that covers a period from 2018 to 2023. Summary statistics are displayed in **Table 7**.

4.4.10 Table 7 shows the River Derwent – River Ouse confluence has a neutral pH of 8.11 and falls within the WFD High classification based on the samples considered here. Dissolved oxygen is classified as High within the water body which suggests the waterbody is not limited by dissolved oxygen levels.

4.4.11 Surface water quality is detailed in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

Table 7. Summary of Physico-Chemical Parameters of the River Derwent – River Ouse confluence (Sampling ID NE-49600301).

Physio-chemical quality element	Minimum	Maximum	Average	WFD Classification
pH	7.75	8.35	8.11	High
Ammoniacal Nitrogen as N (mg/l)	0.03	15	4.98	N/A
Chloride (mg/l)	23	77	51	N/A
Orthophosphate, reactive as P (mg/l)	0.01	1.9	0.70	N/A
Oxygen, Dissolved, % Saturation	84.3	102.1	94.7	High

5. WFD Impact Assessment

5.1 Site Specific Assessment of the Scheme Against WFD Quality Elements

5.2 Components of the Scheme and their potential impacts have been introduced along with mitigation measures in **Table 8**. The purpose of this table is to introduce the key sources of potential impacts and associated mitigation; the compliance assessment follows, which considers impacts on WFD quality elements of each water body.

5.2.1 There is a range of mitigation for the water environment within the Scheme, including watercourse buffers, surface water drainage strategies and appropriate mitigation for watercourse crossings. Where relevant, these are discussed in the screening of the Scheme's activities and components (Table

2), details can also be found in **ES Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1].**

Table 8. Scheme Components, Potential Impacts, and Associated Mitigation Measures for Proposed Works to Water Bodies Scoped into this Assessment.

Scheme Component	Potential Impacts	Mitigation Measures
Non-intrusive (HDD) crossing of water body – excavation of send and receive pits to facilitate directional drilling beneath watercourse bed.	Impacts to physico-chemical quality elements from potential increase in fine sediment load and organic matter delivered to water body. Impacts to biological and physico-chemical quality elements from spillages of drill fluids or pollutants. Potential impacts from groundwater ingress to excavations.	A **Framework CEMP [EN010143/APP/7.7]** has been developed for the Scheme and will be developed into a detailed CEMP (including Water Management Plan (WMP)) post-consent. The Framework CEMP outlines measures that will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse. The Framework CEMP, which outlines measures to reduce the risk of spillages, will be followed. Water-based drilling fluids will be used. A site-specific hydraulic fracture risk assessment, to be prepared post-consent and informed by ground investigation, will be carried out, with site specific mitigation included that is appropriately tailored to the local ground conditions. The WMP will describe measures for implementation in the event of a 'break-out' under a watercourse to minimise the risk of pollution. HDD send and receive pits will be located at least 10 m from the edge of water/channel for normal flows to reduce the risk of pathways being created for runoff or pollutants to enter water bodies. The cable will be installed at least 1.2m below riverbed level, with depths of 1.5 m for Featherbed Drain, DE53 and Loftsome Bridge Drain. The HDDs beneath the River Derwent and River Ouse will be a minimum of 5 m below the channel bed.

Scheme Component	Potential Impacts	Mitigation Measures
Intrusive open-cut crossing of water body – short-term disturbance of watercourses during the construction phase.	Localised but short-term loss of riparian habitat. Short-term impediment to fish passage and ecological connectivity from impact to river continuity. Potential removal of macrophytes and mortality of invertebrates. Short-term adverse impacts to physico-chemical quality elements from potential increase in fine sediment load and organic matter delivered to water body, and chemical spillage risk. Loss of morphological diversity; change in structure of riverbed. Impacts to physico-chemical quality elements from potential increase in fine sediment load and organic matter delivered to water body from the newly reinstated, bare earth banks.	Where practicable, intrusive crossings should be carried out in dry weather at low-flow conditions. If flow is present, this will be flumed or culverted through the works to maintain flow downstream and maintain a dry working area. The **Framework CEMP [EN010143/APP/7.7]** describes measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse. The WMP (produced post-consent, as secured through the CEMP) will describe in further detail the pollution prevention measures and proposed water quality monitoring required during construction. A pre-works condition survey will be carried out to inform reinstatement of the channel. Reinstatement will return in-stream vegetation from its temporary locations, and the banks of the watercourse replanted and reseeded in accordance with the reinstatement plans contained within the detailed Landscape and Ecological Management Plan (LEMP) prepared post consent. The area of bank reinstatement will be covered with hessian to encourage plant establishment and reduce the risk of soil erosion. The hessian will naturally degrade in-situ as the vegetation grows back.

5.2.2 Site-specific impacts of the Scheme on the biological, physico-chemical and hydromorphological quality elements of the screened-in water bodies are provided in **Table 9**. The impact assessment on the groundwater bodies is provided in **Table 10** and only applies to non-intrusive crossings as all other activities have been screened out for ground water. The mitigation referred to in these tables forms the basis of this assessment, and the conclusions drawn from the assessment are subject to the appropriate implementation of the mitigation measures provided.

Table 9. Impact Assessment on the WFD Quality Elements of the Surface Water Bodies Screened-In for this Assessment.

Scheme Component	Potential Impacts	Mitigation Measures
Biological Quality Elements		
Fish	**Cable Crossings** Potential for loss of biological continuity resulting in interference with fish population movements and blocking the exchange of individuals among populations, reducing gene flow, and disrupting the ability of 'source' populations to support declining populations nearby, resulting from short-term blockages in longitudinal connectivity from the intrusive crossing method. Possible harm to fish from spillages or pollution from fine sediment, drilling fluids (water based) and chemicals used during construction (e.g. fuel and hydraulic oil), and through disturbance when intrusive techniques are used.	The detailed CEMP and WMP will be followed for the installation of cables, with outline measures included within the **Framework CEMP [EN010143/APP/7.7]**. This includes measures which would be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. The **Framework CEMP** also outlines measures to reduce the risk of spillages. Water-based drilling fluids will be used. Where practicable, it is proposed to carry out the works for intrusive crossings in dry weather, as it is expected that several of the smaller watercourses proposed to be crossed by intrusive methods may be expected to be dry for parts of the year, and it is unlikely fish will be present. If flow is present within the watercourse, this will be over-pumped or flumed which will reduce impact to flow dynamics. Fish surveys and rescues, if required at the time of construction, will be carried out prior to works; this will be detailed in the CEMP. Send and receive pits for non-intrusive crossings (HDD) will be located at least 10 m away from the watercourse (and 16 m from the landward toe of flood defences) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies. The working width of both the Interconnecting and Grid Connection Cables is typically

Scheme Component	Potential Impacts	Mitigation Measures
		30 m may be narrowed (to a minimum of 5.0 m) where required for example at open cut watercourse crossings. The flume bed level will be set below the existing bed level to allow for the natural excavated bed to be placed over the flume base. The channel gradient will not be disrupted; there will be a smooth transition through the channel bed to the flume bed. Flume capacity will be designed to ensure flow velocities are not impacted, and the flume will be oversized. All of these measures will mean that fish access is not impeded. Impacts to biological continuity are not considered to be significant given the localised, small scale, and short-term nature of the works, and the small nature of most of the watercourses at the crossing location that is unlikely to provide preferable habitat for fish. With the proposed mitigation in place, it is not expected that there would be an impact to this quality element.
Invertebrates	**Cable Crossings** Harm or direct mortality to invertebrates through excavation of the channel bed and bank. Possible harm to invertebrates from spillages or pollution from fine sediment, drilling fluids (water based) and chemicals used during construction (e.g. fuel and	The mitigation measures set out in the CEMP and WMP will be followed for the installation of cables. The **Framework CEMP [EN010143/APP/7.7]** outlines measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. The CEMP and WMP outline measures to reduce the risk of spillages. Water-based drilling fluids will be used.

Scheme Component	Potential Impacts	Mitigation Measures
	hydraulic oil), and through disturbance when intrusive techniques are used.	Send and receive pits for non-intrusive crossings (HDD) will be located at least 10 m away from the watercourse (and 16 m from the landward toe of flood defences) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies. The working width of both the Interconnecting and Grid Connection Cables is typically 30 m but may be narrowed (to a minimum of 5.0 m) where required for example at open cut watercourse crossings. Impacts to invertebrates are not considered to be a significant given the localised, small scale, and short-term nature of the works. With the proposed mitigation in place, it is not expected that there would be an impact to this quality element.
Macrophytes and Phytobenthos	**Cable Crossings** Possible smothering of macrophytes and phytobenthos from excessive fine sediment from construction runoff or drilling fluids, or toxic effects from chemical pollutants that may be spilt on the Draft Order Limits, and through disturbance when intrusive techniques are used. Possible removal of macrophytes and phytobenthos from excavation of the channel bed and bank.	The mitigation measures set out in the CEMP and WMP will be followed for the installation of cables. The **Framework CEMP [EN010143/APP/7.7]** outlines measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. The CEMP and WMP outline measures to reduce the risk of spillages. Water-based drilling fluids will be used. Send and receive pits for non-intrusive crossings (HDD) will be located at least 10 m away from the watercourse (and 16 m from the landward toe of flood defences) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies. The working width of both the Interconnecting and Grid Connection Cables is typically

Scheme Component	Potential Impacts	Mitigation Measures
		30 m but may be narrowed (to a minimum of 5.0 m) where required for example at open cut watercourse crossings. Impacts to macrophytes and phytobenthos are not considered to be significant given the localised, small scale, and temporary, short-term nature of the works and the artificial nature of the majority of watercourses subject to this activity. With the proposed mitigation in place, it is not expected that there would be an impact to this quality element.
Physico-chemical Quality Elements		
Oxygenation conditions	**Cable Crossings** Possible reduction in levels of dissolved oxygen from excavation activities for send and receive pits, for HDD and intrusive crossing excavation activities which may create a source and pathway for the delivery of fine sediments and organic material to the water body.	The mitigation measures set out in the CEMP and WMP will be followed for the installation of cables. The **Framework CEMP [EN010143/APP/7.7]** outlines measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. Intrusive crossings will be carried out in dry weather when flow is at its lowest. Reinstated banks will be covered with biodegradable matting where required and seeded as soon as practicable to reduce risk of bank erosion and delivery of fine sediment and organic material to water bodies. Send and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (and 16 m from the landward toe of flood defences) to reduce the risk of pathways being created for runoff or pollutants to enter

Scheme Component	Potential Impacts	Mitigation Measures
		water bodies. The working width of both the Interconnecting and Grid Connection Cables is typically 30 m but may be narrowed (to a minimum of 5.0 m) where required for example at open cut / intrusive watercourse crossings. With the proposed mitigation in place, it is not expected that there would not be a significant impact to oxygenation conditions.
Nutrient conditions	**Cable Crossings** Possible increase in nutrient levels from excavation activities for send and receive pits for HDD, and intrusive crossing excavation activities which may create a source and pathway for delivery of nutrients to the water body.	The mitigation measures set out in the CEMP and WMP will be followed for the installation of cables. The **Framework CEMP [EN010143/APP/7.7]** outlines measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. Intrusive crossings will be carried out in dry weather when flow is at its lowest. Reinstated banks will be covered with biodegradable matting and seeded as soon as practicable to reduce risk of bank erosion and delivery of fine sediment and organic material to water bodies. Send and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (and 16 m from the landward toe of flood defences) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies. The working width of both the Interconnecting and Grid Connection Cables is typically 30 m but may be narrowed (to a minimum of 5.0 m) where required for example at open cut / intrusive watercourse crossings. With

Scheme Component	Potential Impacts	Mitigation Measures
		the proposed mitigation in place, it is not expected that there would not be a significant impact to nutrient conditions.
Hydromorphological Quality Elements		
River continuity	**Intrusive Cable Crossings** There will be some unavoidable short-term interruption to river continuity during the construction phase from intrusive crossings. The watercourses in question are mostly of low hydromorphological quality as they are artificial, trapezoidal drainage ditches.	Where practicable, intrusive crossings will be carried out in dry weather when flow is at its lowest. At intrusive crossings, flow will be maintained if required by flumes. Flume pipes will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions. The flume bed level will be set below the existing bed level to allow for the natural excavated bed to be placed over the flume base. The channel gradient will not be disrupted; there will be a smooth transition through the channel bed to the flume bed. Before installation of the cable by the intrusive crossing method, a pre-works condition survey will be carried out to inform reinstatement of the channel. Reinstatement should aim to provide an improved channel form. With the proposed mitigation in place, it is not expected that there would be a significant impact to river continuity given the short-term nature and small scale of the barrier and the ephemeral or artificial nature of the majority of water bodies subject to this activity.
River depth and width variation	**Intrusive Cable Crossings**	A pre-works condition survey will be carried out to inform reinstatement of the channel for watercourse crossings. The flume bed level will be set below the existing bed level to

Scheme Component	Potential Impacts	Mitigation Measures
	There will be some unavoidable short-term disturbance during the construction phase of cable crossings. The watercourses in question are mostly of low hydromorphological quality as they are artificial, trapezoidal drainage ditches.	allow for the natural excavated bed to be placed over the flume base. The channel gradient will not be disrupted; there will be a smooth transition through the channel bed to the flume bed. Before installation of the cable by the intrusive crossing method, a pre-works condition survey will be carried out to inform reinstatement of the channel. Reinstatement should aim to provide an improved channel form. Bed material, including any gravels will be retained on site for reinstatement to the watercourse. Material will be cleaned of fine sediment where appropriate prior to reinstatement. With the proposed mitigation in place, it is not expected that there would be a significant impact to river depth and width variation.
Structure and substrate of the river bed	**Intrusive Cable Crossings** There will be some unavoidable short-term disturbance during the construction phase. There are possible changes to bed substrate upon reinstatement of the channel from intrusive crossings. The watercourses in question are mostly of low hydromorphological quality as they are artificial, trapezoidal drainage ditches.	The flume bed level will be set below the existing bed level to allow for the natural excavated bed to be placed over the flume base. The channel gradient will not be disrupted; there will be a smooth transition through the channel bed to the flume bed. Before installation of the cable by the intrusive crossing method, a pre-works condition survey will be carried out to inform reinstatement of the channel. Bed material, including any gravels will be retained on site for reinstatement to the watercourse. Material will be cleaned of fine sediment where

Scheme Component	Potential Impacts	Mitigation Measures
		appropriate prior to reinstatement. Reinstatement will be consistent with that of the adjacent retained or lost landscape elements and provide enhancement of the existing Design. For sensitive water crossings (i.e., WFD water bodies), the Working Width should be reduced as far as is practicable. The Working Width is typically 30 m but may be narrowed (to a minimum of 5.0 m) where required. With the proposed mitigation in place, it is not expected that there would be a significant impact to the structure and substrate of the river bed.
Structure of the riparian zone	**Cable Crossings** There will be some unavoidable short-term disturbance during the construction phase. The watercourses in question are mostly of low hydromorphological quality as they are artificial, trapezoidal drainage ditches. Loss of riparian habitat at the location of the excavation for the cable. Crossings would present a local removal and disconnection of the channel from the riparian zone.	Before installation of the cable pre-works condition survey will be carried out to inform reinstatement of the riparian zone. Reinstatement should aim to provide an improved the riparian zone form. The area of bank reinstatement will be covered with biodegradable matting, where required, to encourage plant establishment and reduce the risk of soil erosion. The hessian will naturally degrade in-situ as the vegetation grows back. Send and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (and 16 m from the landward toe of flood defences) and open span crossings require the construction of a raised soil platform each side of the watercourse (set back from the watercourse banks), which will help to minimise disturbance of the bank and riparian vegetation. For sensitive water crossings, the

Scheme Component	Potential Impacts	Mitigation Measures
		Working Width should be reduced as far as is practicable. The Working Width is typically 30 m but may be narrowed (to a minimum of 5.0 m) where required. With the proposed mitigation in place, it is not expected that there would be a significant impact to the structure of the riparian zone.

Table 10. Impact Assessment for the Non-Intrusive Waterbody Crossings on the WFD Quality Elements of the Groundwater Body Screened Into this Assessment.

WFD Quality Moment	Potential Impacts	Mitigation and Compliance Assessment Justification
Quantitative Status Elements		
Quantitative Saline Intrusion	No anticipated impact	No mitigation required
Quantitative Water Balance	Potential for groundwater ingress to excavations to facilitate the cable crossing. Potential for uncontrolled water resource loss, due to unexpected artesian flow. Send and receive pits will be dug where it is likely groundwater will be similar to river water level. The level of ingress would	Excavations for watercourse crossings to be programmed so that works are completed in the most efficient and timely manner practicable. An appropriate intrusive ground investigation of selected areas of the Site will be undertaken in accordance with all relevant guidance and legislation including BS 10175:2011, Environment Agency/DEFRA Land Contamination Risk Management (LCRM) series of reports (see also section **16.4: Ground Conditions of**

WFD Quality Moment	Potential Impacts	Mitigation and Compliance Assessment Justification
	depend upon the depth of the pit, and very local geological conditions. Solar PV Area 1c (Grid Connection Substations) drains to the ground causing surface water runoff from this field which will have to be managed with flows reduced to the greenfield rate.	**Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1].** If areas of the Site are shown to pose a risk, if feasible, infrastructure would be moved to a different location. However, if it is not practicable to move the infrastructure in contact with the ground, remedial measures would be implemented. Installation of the cable will be short term, temporary, transient and undertaken sequentially. Sides of excavations will be shored, the nature of which will depend on ground conditions, size, depth and purpose of excavation, which will further minimise groundwater ingress. Surface run off from Solar PV Area 1c will be managed through a detailed **Surface Water Drainage Strategy** prepared post-consent and informed by infiltration testing. A **Framework Surface Water Drainage Strategy (Appendix 9.4, ES Volume 2 [EN010143/APP/6.2])** is submitted with the DCO Application. Surface run off from Solar PV Area 1c is not significant at the water body scale. Given the proposed mitigation, any impacts to the quantitative water balance would be very localised and temporary, and would not be considered significant at the water body scale.
Quantitative Groundwater-Dependent Terrestrial	The River Derwent GWDTE crosses the cable corridor for an area of 9000 m^2. There is potential for groundwater ingress to	Standard environmental protection measures will be implemented and adopted during construction, formalised through a detailed CEMP (secured through DCO Requirement). The mitigation outlined in the Framework CEMP would also prevent any potential

WFD Quality Moment	Potential Impacts	Mitigation and Compliance Assessment Justification
Ecosystems (GWDTE) test	excavations to facilitate the cable crossing of the River Derwent.	effects on the groundwater and therefore associated habitats dependent on groundwater. A **Framework CEMP [EN010143/APP/7.7]** is submitted with the DCO Application. The area of GWDTE within the Study Area is a small proportion of the total GWDTE area and therefore any impacts would not be considered significant
Quantitative Dependent Surface Water Body Status	Potential for groundwater ingress to excavations to facilitate the cable crossing. Send and receive pits for HDDs will be dug where it is likely groundwater will be similar to river water level. The level of ingress would depend upon the depth of the pit, and very local geological conditions.	Excavations for watercourse crossings to be programmed so that works are completed in the most efficient and timely manner practicable. Installation of the cable will be short term, temporary, transient, and undertaken sequentially. The exact dimensions of the send and receive pits would be determined by site and ground conditions but will be kept to a safe minimum in terms of length, width and depth. Maximum parameters considered here as a worst case are dimensions of 8 m length x 4 m width x 1 m depth. A shoring system appropriate to the ground conditions will be used as required to minimise water ingress into the pits. The method would be chosen based on suitability for the site conditions by the specialist contractor. The ingress of any groundwater will be carefully managed through design of the send or receive pit, shoring method, and a pumping and treatment system. Excessive ingress of water would make the pit unsafe and thus it is important that ingress is minimised and that a suitable system of managing that water is implemented.

WFD Quality Moment	Potential Impacts	Mitigation and Compliance Assessment Justification
		If required, water could be returned to the watercourse following treatment to maintain flows. This would require a Water Activity Permit (discharge consent) from the Environment Agency. Groundwater ingress to excavations would be very localised, and given the proposed mitigation, any impacts to the quantitative dependent surface water body status would not be considered significant.
Chemical Status Elements		
Chemical Drinking Water Protected Area	Excavations for installation of cable crossings may introduce pollutants to groundwater from equipment leaks/spills. Potential for groundwater pollution from disturbing contaminated ground (mobilising contaminants).	The detailed CEMP and WMP will be followed, building on the **Framework CEMP [EN010143/APP/7.7]** which outlines measures which will be taken to prevent leaks and spills and clean up procedures in case of leaks/spills. It also outlines measures which will be taken to prevent the ingress of fine sediment or other material to groundwater. Assessment for contaminated spoil may be required to determine measures to reduce the potential risk to groundwater (e.g. segregation of materials and validation testing). Given the proposed mitigation, the risk of impacts is low, and would be temporary and localised, therefore there is not expected to be an impact to the Chemical Drinking Water Protected Area. There is potential for migration of contamination into areas of non-intrusive cable construction, the installation of the cable to a general maximum depth of 1.4 m below ground is not considered at this stage to create a significant risk of mobilising contaminants into the underlying aquifers or risking infiltration to the water table.

WFD Quality Moment	Potential Impacts	Mitigation and Compliance Assessment Justification
		Nonetheless, prior to construction works commencing, a targeted scheme of Ground Investigation and testing followed by a Quantitative Risk Assessment will be completed as further discussed in **Section 16-4: Ground Conditions of ES Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1].** This will be in accordance, if and where necessary, with CLR11 Model Procedures for the Management of Contaminated Land (Ref. 10-18), BS10175:2011+ A2:2017 Investigation of Potentially Contaminated Sites: Code of Practice (Ref. 10-19) and the Environment Agency's GPLC1 Guiding Principles for Land Contamination in Assessing Risks to Controlled Waters (Ref. 10-20). With best practice approaches to identification and remediation of contaminated land adopted in line with this guidance, a negligible impact to groundwater quality is predicted with regard to mobilisation of contaminants.
General Chemical test	Excavations for installation of cable crossings may introduce pollutants to groundwater from equipment leaks/spills and mobilising contaminants through disturbing contaminated ground. Potential for groundwater ingress to excavations to facilitate the cable crossing. Send and receive pits for HDD will be dug where it is likely groundwater will be similar to river water level. The level of ingress would	The CEMP and WMP will be followed. These documents build upon the **Framework CEMP [EN010143/APP/7.7]** which outline measures which will be taken to prevent leaks and spills and clean up procedures in case of leaks/spills. It also outlines measures which will be taken to prevent the ingress of fine sediment or other material to groundwater. Assessment for contaminated spoil may be required to determine measures to reduce the potential risk to groundwater (e.g. segregation of materials and validation testing). The detailed design for non-intrusive crossings will include depth and profile and consider methods to reduce the risk of groundwater breakout during drilling. A site specific hydraulic

WFD Quality Moment	Potential Impacts	Mitigation and Compliance Assessment Justification
	depend upon the depth of the pit, and very local geological conditions.	fracture risk assessment would be undertaken prior to works to mitigate this risk (secured through the DCO). Given the proposed mitigation, impacts to this chemical status element would be very localised and short-term, and would not be considered significant at the water body scale.
Chemical GWDTEs test	No GWDTEs are known to be present in the Study Area.	No mitigation required.
Chemical Dependent Surface Water Body Status	Excavations for installation of cable crossings may introduce pollutants to groundwater from equipment leaks/spills. Potential for groundwater ingress to excavations to facilitate the cable crossing. Send and receive pits for HDD will be dug where it is likely groundwater will be similar to river water level. The level of ingress would depend upon the depth of the pit, and very local geological conditions.	The detailed CEMP and WMP will be followed, building on the outline measures in the **Framework CEMP [EN010143/APP7.7**] which are to prevent leaks and spills and clean up procedures in case of leaks/spills. Given the mitigation will follow best practice, and any impacts to the water quality of groundwater would be short-term and minimal, no anticipated impacts to the chemical dependent surface water body status are expected.
Chemical Saline Intrusion	No anticipated impact.	No mitigation required.

6. Construction Impacts

6.1 Potential Construction Impacts

6.1.1 There are a number of general adverse impacts to the water environment which may occur from construction activity, including:

a. Pollution of surface or groundwater due to deposition or spillage of soils, sediment, oils, fuels, or other construction chemicals, or through uncontrolled site run-off;

b. Potential impact on groundwater quality from piling and dewatering operations associated with watercourse crossings;

c. Temporary, short-term impacts on sediment dynamics and hydromorphology within watercourses and waterbodies, where new crossings are required due to construction works to lay cable and watercourse crossings for site access;

d. Temporary, short-term changes in flood risk from changes in surface water runoff and exacerbation of localised flooding, due to deposition of silt, sediment in drains and ditches;

e. Temporary, short-term changes in flood risk due to the construction of site compound and storage facilities, which alter the surface water runoff from the Site; and

f. Potential impacts on local water supplies.

6.1.2 Further details are provided in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

6.2 Construction Mitigation

6.2.1 Construction will take place in accordance with the detailed CEMP. The **Framework CEMP [EN010143/APP/7.7]** provided with the DCO Application sets out the measures that would be undertaken during construction to mitigate the temporary effects on the water environment. This will be developed into a detailed CEMP in advance of construction works by the Principal Contractor.

6.2.2 The detailed CEMP will comprise good practice methods that are established and effective measures to which the Scheme will be committed through the DCO. (it will be required to be substantially in accordance with the Framework CEMP under a Requirement of the DCO). The measures within the CEMP relating to the water environment will focus on managing the risk of pollution to surface waters and the groundwater environment. It will also consider the management of activities within floodplain areas (i.e., kept to a minimum and with temporary land take required for construction to be located out of the floodplain as far as reasonably practicable).

6.2.3 The CEMP will be supported by a WMP that will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction.

6.2.4 Good Practice Guidance is summarised in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**, which includes information on:

a. Permissions and Consents;

b. Management of Construction Site Runoff;

c. Management of Construction Site Spillage Risk; and

d. Management of Flood Risks.

6.2.5 It is anticipated that all WFD construction risks could be adequately mitigated with appropriate planning and management.

6.2.6 Potential impacts from the decommissioning of the Scheme are similar in nature to those during construction, as some ground works would be required to remove infrastructure installed. A detailed DEMP (secured through the DCO) will be prepared prior to decommissioning to identify required measures to prevent pollution during this phase of the development. A **Framework DEMP** accompanies the DCO Application **[EN010143/APP/7.9]**.

6.2.7 The mode of cable decommissioning for the Grid Connection and Interconnecting Cables will be dependent upon government policy and best practice at that time. Currently, the most environmentally acceptable option is considered to be leaving the cables in situ, as this avoids disturbance to overlying land and habitats and to neighbouring communities. Alternatively, the cables can be removed by opening up the ground at regular intervals and pulling the cable through to the extraction point, avoiding the need to open up the entire length of the cable route. In this circumstance the ducting is likely to remain in place. Given that all cables are minimum of 1.5 m below the bed of watercourses (and a minimum of 5 m in the case of the River Ouse and River Derwent), this is not anticipated to prevent natural geomorphic evolution or potential future restoration of affected areas. As a result, it is considered the decommissioning impacts and effects would be largely similar to those of the construction phase. There would also be no additional crossing requirements, and so impacts and effects relating to crossings would not occur, Overall, no additional impacts are anticipated.

7. Assessment of the Scheme Against WFD Mitigation Measures

7.1.1 The Environment Agency identifies mitigation measures for water bodies, which are actions that can be implemented to protect and improve the water environment and help achieve the objectives for each RBMP. This section of the assessment considers the nature of the measures identified by the Environment Agency for each water body and assesses whether the Scheme may prevent such measures being implemented.

7.1.2 The Scheme has been appraised against measures identified for all screened-in water bodies, which are available via the Environment Agency's Catchment Data Explorer (Ref. 2). This appraisal is presented in **Table 11**.

Table 11. Appraisal of the Scheme Against the Delivery of Measures Identified for the Waterbodies Scoped into this Assessment.

Measure Theme	Further Detail on Measure	Appraisal of the Scheme
To prevent groundwater saline intrusion	Embargo future abstraction	The **Framework CEMP [EN010143/APP/7.7]** would ensure that the water environment would not suffer from adverse effects during construction including requirements for water quality monitoring.
	Remediation of land contamination and/or groundwater	The majority of the Site would drain naturally via infiltration to ground and there would be no water quality risks relating to runoff of rainfall from the Solar PV Areas. The **Framework Surface Water Drainage Strategy Appendix 9-4, ES Volume 2 [EN010143/APP/6.2])** has been developed in consultation with the Ouse and Humber Drainage Board for Solar PV Area 1c (Grid Connection Substations). This area would not drain towards any water bodies, and there is no requirement for operational outfalls to discharge runoff to watercourses for any part of the Scheme. There would be no operational runoff relating to the Grid Connection Corridor.
To control or manage point source inputs of pollution	Install nutrient reduction to mitigate impacts on receptor	The Surface Water Drainage Strategy for the Scheme would ensure no negative effects on nutrient pathways would be caused by the Grid Connection Substations in Solar PV Area 1c. The change in land use in the Solar PV Site from agriculture to grassland will result in a decrease in the production of source inputs of agricultural nutrients. Therefore, the Scheme would not impact the implementation of this measure.
To control or manage rural diffuse pollution	Reduce diffuse pollution pathways (surface run-off and drainage management)	The Surface Water Drainage Strategy for the Scheme would ensure no negative effects on nutrient pathways would be caused by the Grid Connection Substations in Solar PV Area 1c.
	Ensure safe storage of on-farm pollutants, chemicals, and wastes	The change in land use in the Solar PV Site from agriculture to grassland will result in a decrease in the production of source inputs of agricultural nutrients.

Measure Theme	Further Detail on Measure	Appraisal of the Scheme
	Limit fertiliser and chemical application	Therefore, the Scheme would not impact the implementation of these measures.
To improve modified habitat	Remove or ease barriers to fish migration to enable fish passage	There will be some unavoidable temporary disturbance during the construction phase of watercourses subject to intrusive cable crossings, but this will be over a relatively short timeframe. The watercourses in question are of low hydromorphological quality as they are artificial, trapezoidal drainage ditches and not thought to be sensitive to such works. Therefore, the Scheme would not impact the implementation of these measures.
	Replace outfalls	
	Promote and deliver best practice vegetation control and maintenance	Grazing by sheep is the Applicant's preferred option for the management of the grassland created within the solar farm. Should grazing not be possible in some or all areas of the Solar PV Site, grassland will instead be managed by mowing typically using a tractor and flail. Where mowing/strimming is required, as a worst case there may be localised use of herbicide or other spray chemical in small volumes. This is not a planned operation of the Scheme, but the occasional use during the lifetime of the Scheme cannot be ruled out. Should this be required, a Method Statement, Operating Procedure or similar will be prepared prior to the work commencing, this will include measures to protect ground and surface water, including working in dry weather and not in high winds, and maintaining appropriate buffers from watercourses. Application of chemicals would only be carried out by suitably competent personnel using products approved for UK use with adherence to manufacturer's instructions. This mitigation is secured through the **Operational Environmental Management Plan (OEMP),** a **Framework OEMP [EN010143/APP/7.8]** is provided with the DCO Application**.**

7.2 Assessment Against WFD Objectives

7.2.1 The compliance of the Scheme is determined based upon an assessment against the following objectives relating to WFD quality elements, including biological, physico-chemical and hydromorphological quality elements:

a. Whether the Scheme will cause deterioration in the Ecological Potential or Status of a water body;

b. Whether the Scheme will compromise the ability of a water body to achieve Good Ecological Status or Potential;

c. Whether the Scheme will cause a permanent exclusion or compromise achievement of the WFD objectives (e.g., mitigation measures) in other water bodies within the same RBD; and

d. Whether the Scheme will contribute to the delivery of the WFD objectives (e.g., mitigation measures).

7.2.2 The WFD compliance assessment for the Scheme is summarised in **Table 12**. The Scheme is expected to be compliant with the objectives of the WFD.

Table 12. Compliance Assessment of the Scheme.

Compliance Elements	Water Body Assessment	Groundwater Body Assessment
Water body name and ID	Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690)	Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) Derwent Sherwood Sandstone (GB40401 G700600) East Riding Mercia Mudstone (GB40402 G990200)
Deterioration in the status/potential of the water body	The Scheme is not anticipated to cause a deterioration in potential.	The Scheme is not anticipated to cause a deterioration in status.
Ability of the water body to achieve Good Ecological Potential/Status	The Scheme and associated mitigation would not cause deterioration in status of the water bodies and would not prevent the water bodies achieving Good Ecological Potential.	The Scheme and associated mitigation would not prevent the water body reaching Good Status.
Impact on the WFD objectives of other water	No downstream or upstream impacts are anticipated associated with the Scheme and the mitigation measures proposed.	No wider impacts from the Scheme are anticipated and the

Compliance Elements	Water Body Assessment	Groundwater Body Assessment
bodies within the same RBD		mitigation measures proposed.
Ability to contribute to the delivery of the WFD objectives	The Scheme does contribute to the delivery of WFD objectives within the Order limits through reinstatement following construction.	The Scheme does contribute to the delivery of WFD objectives.

8. Conclusion

8.1.1 This assessment has considered the potential impacts and associated mitigation of the Scheme in relation to the WFD quality elements of the following surface and groundwater water bodies:

a. Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) – River

b. Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) – River

c. Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) – River

d. Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) – River

e. Aire from Fryston Beck to River Ouse Water Body (GB104027063037) - River

f. Birk Lane Drain Catch (tributary of Derwent) Water Body (GB104027063430) – River

g. Barmby Water Body (GB30430722) – Lake

h. Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) – Groundwater

i. Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater

j. East Riding Mercia Mudstone (GB40402 G990200) – Groundwater

8.1.2 The risk of impacts to the following water bodies have been Screened Out and Scoped Out:

a. Aire from Fryston Beck to River Ouse Water Body (GB104027063037) - River

b. Birk Lane Drain Catch (tributary of Derwent) Water Body (GB104027063430) - River

c. Barmby Water Body (GB30430722) - Lake

8.1.3 Potential risks for some activities for some WFD elements were Scoped In for:

a. Ouse from R Wharfe to Upper Humber Water Body (GB104027064270) - River

b. Derwent from Elvington Beck to River Ouse Water Body (GB104027068311) - River

c. Fleet Dike catch (trib of Ouse) Water Body (GB104027063630) - River

d. Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690) – River

e. Wharfe and Ouse Lower Sherwood Sandstone (GB40401 G702400) - Groundwater

f. Derwent Sherwood Sandstone (GB40401 G700600) – Groundwater

g. East Riding Mercia Mudstone (GB40402 G990200) - Groundwater

8.1.4 The risks surrounding the Scheme will be managed through the implementation of measures contained in the detailed CEMP (including the WMP) and Surface Water Drainage Strategy to be prepared post-consent (**Framework CEMP [EN010143/APP/7.7]** and **Framework Surface Water Drainage Strategy Appendix 9-4, ES Volume 2 [EN010143/APP/6.2**]). A WFD Mitigation and Enhancement Strategy would also be developed post-consent outlining length-for-length equivalent watercourse enhancements to mitigate culvert extensions.

8.1.5 The Scheme would not prevent the achievement of the wider WFD objectives in the Humber RBMP and is not predicted to have an impact on any other water body within the Humber RBD or mitigation measures developed to achieve Good status.

8.1.6 In terms of compliance with WFD Objectives, the following key consenting questions can be answered as follows:

a. Does the proposed development cause deterioration in the Ecological Potential or Status of a body of surface or ground water?

- No (the proposals are WFD Compliant)

b. Does the proposed development compromise the ability of the water body to achieve Good Ecological Status or Potential?

- No (the proposals are WFD Compliant)

c. Does the proposed development cause a permanent exclusion or compromise achievement of the WFD objectives (e.g. mitigation measures) in other water bodies within the same RBD?

- No (the proposals are WFD Compliant)

d. Does the proposed development contribute to the delivery of the WFD objectives (e.g. mitigation measures)?

- Yes (the proposals are WFD Compliant)

9. References

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Annex A – Water Framework Directive Water Bodies and their Attributes

Revision: 0 Drawn: LP Checked: JW Approved: WD Date: 2023-10-30

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LEGEND

- Order limits
- Land not included in the Order limits
- Solar PV Site (xx = Solar PV Area)
- Ecology Mitigation Area (xx = Ecology Mitigation Area)
- 1km Buffer of the Order limits
- WFD River Waterbody
- Main River
- Ordinary Watercourse
- Barmby Water Body (GB30430722)

WFD Ground Waterbody

- Aire & Don Sherwood Sandstone
- Derwent Sherwood Sandstone
- East Riding Mercia Mudstone
- Wharfe & Lower Ouse Sherwood Sandstone

NOTES

ISSUE PURPOSE

Environmental Statement

PROJECT NUMBER

60683115

FIGURE TITLE

Water Framework Directive Water Bodies and their Attributes

FIGURE NUMBER

Appendix 9-2-1

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