FENWICK SOLAR FARM

Preliminary Environmental Information Report

Volume III Appendix 9-2: WFD Screening and Scoping Report

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1. Introduction

1.1 Background

1.1.1 This Water Framework Directive (WFD) Screening and Scoping Assessment has been produced as part of the Preliminary Environmental Information Report (PEIR) for Fenwick Solar Farm (hereafter referred to as 'the Scheme'). This is done so that statutory bodies can be consulted on the need for, and scope of any further, more detailed stages of WFD assessment. WFD Screening had previously been conducted in April 2023 (and included as an appendix to the EIA Scoping Report, see **PEIR Volume III Appendix 1-1: EIA Scoping Report**) and so this document is an update of that assessment to include and take into account additional important information regarding the Scheme.

1.1.2 Throughout this appendix the following definitions are used to describe the key areas and elements of the Scheme. These are illustrated in **PEIR Volume II Figure 1-3: Elements of the Site**:

a. Solar Photovoltaic (PV) Site – the total area covered by the ground-mounted Solar PV Panels, planting and mitigation areas, Field Stations, Battery Energy Storage System (BESS) Area, On-Site Substation, and associated infrastructure;

b. Grid Connection Corridor – the area outside the Solar PV Site in which the 400 kilovolt (kV) and associated cables (the Grid Connection Cables) would be installed between the On-Site Substation to the Existing National Grid Thorpe Marsh Substation (approximately 6 km south of the Solar PV Site);

c. Existing National Grid Thorpe Marsh Substation – the existing Thorpe Marsh Substation (owned and operated by National Grid) where the 400 kV Grid Connection Cables would connect to the grid; and

d. The Site – the collective term for the Solar PV Site, Grid Connection Corridor, and Existing National Grid Thorpe Marsh Substation. The boundary of the Site is referred to as the Site Boundary.

1.1.3 Due to its proposed generating capacity, the Scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and therefore requires consent via a Development Consent Order (DCO) under the Planning Act 2008 (Ref. 1).

1.1.4 Full details of the Scheme components are provided in **PEIR Volume I Chapter 2: The Scheme**.

1.1.5 The Scheme interacts with four WFD surface water bodies and thus it is necessary to consider the activities and constituent parts of the Scheme to determine compliance with WFD objectives. This includes assessing the impacts of new Solar PV Panels, supporting infrastructure, Site drainage and cable crossings of water bodies on the biological, physico-chemical and hydromorphological quality elements that comprise the WFD to ensure no

deterioration and no prevention of future improvement in water body status. Both surface and groundwater bodies are considered.

1.1.6 The Study Area (see Section 1.2) is also underlain by one WFD groundwater body and thus it is necessary to consider potential impacts on its quality and quantitative status.

1.1.7 This report therefore presents the findings of the WFD screening exercise (the first stage in the WFD assessment process) which has been undertaken in relation to the Scheme. A WFD scoping assessment is also included in this report.

1.1.8 A full assessment of WFD compliance will be undertaken in continued consultation with the Environment Agency as part of the Environmental Statement (ES).

1.2 Study Area

1.2.1 For the purposes of this assessment, and consistent with **PEIR Volume I Chapter 9: Water Environment**, a general Study Area (Zone of Influence) of approximately 1 km from the Site Boundary 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 water quality impacts may 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 water available for any water features (which in this case is typically for a few kilometres). Professional judgement has been applied to identify the extent to which such features are considered.

1.2.2 The Study Area falls within the following surface water body catchments:

a. Went from Blowell Drain to the River Don (GB104027064260);

b. Don from Mill Dyke to River Ouse (GB104027064243);

c. Bramwith Drain from Source to River Don (GB104027063290); and

d. Ea Beck from the Skell to River Don (GB104027057591).

1.2.3 There are also several tributaries of these 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. Thus, these minor watercourses are assessed as part of the catchment WFD water body.

1.2.4 The Study Area is also underlain by one WFD groundwater body: Aire and Don Sherwood Sandstone (GB40401G701000).

1.2.5 Refer to **PEIR Volume II Figure 9-1: Surface Water Features and their Attributes** for water body locations in relation to the Site.

1.3 Introduction to the Water Framework Directive

1.3.1 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref. 2), 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 that were published in 2022.

1.3.4 In England, the Environment Agency (EA) 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 developer.

1.3.5 The EA is also responsible for managing flood risk and other activities on Main Rivers. Local planning authorities or Internal Drainage Boards (IDB) are typically responsible for consenting activities that may affect the flow of Ordinary Watercourses. Local planning and highway authorities are typically responsible for highways drains, and landowners are typically responsible for ditches and watercourses within their property including piped watercourses and culverts (i.e. they have riparian ownership). While the EA is ultimately responsible for enforcing the WFD on any water body, local planning authorities and other regulating bodies are required to consider RBMPs when exercising their statutory functions.

1.3.6 As part of its regulatory and statutory consultee role on planning applications and environmental permitting (under the Environmental Permitting Regulations (England and Wales) 2016), the EA 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 Water Environment Regulations 2017 (Ref. 2) (i.e. 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 Scheme must

therefore reflect water body improvement priorities as outlined in the Humber RBMP (Ref. 3).

1.3.8 In determining whether a development is compliant or non-compliant with the WFD objectives for a water body, the EA and partnering organisations must also consider the conservation objectives of any Protected Areas (i.e. 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 (2016a). Water Framework Directive risk assessment. How to assess the risk of your activity (Ref. 4); and

b. The Planning Inspectorate (2017). Advice Note 18: The Water Framework Directive (Ref. 5).

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 The Planning Inspectorate (2017) and briefly summarised below.

2.1.4 This WFD comprises a Screening and Scoping assessment, identifies requirements (if any) for WFD impact mitigation commitments in the planning submission, and identifies requirements for further WFD impact assessment at future design stages.

2.2 Stage 1: Screening

2.2.1 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.

2.3 Stage 2: Scoping

2.3.1 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. As this WFD assessment is being applied after initial design for the project has already occurred, where impacts have

already been addressed through that design this has been recorded at Stage 2 of the assessment.

2.4 Stage 3: Impact Assessment

2.4.1 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.

2.5 Mitigation Commitments

2.5.1 Proposed mitigation activities relied upon to demonstrate compliance at any of the stages referred to above must be appropriately defined and sufficiently secured through DCO requirements or other legally binding methods.

2.6 Further Assessments if WFD Derogation is to be Considered by the Applicant

2.6.1 WFD Regulation 17 and Regulation 19 set out 'last resort' planning and legal processes for WFD derogation that are not part of this report. Case review of any proposed justification by an applicant would be a matter for the Secretary of State, and is likely to require a substantial body of multi-disciplinary evidence.

2.6.2 Where the potential for deterioration of water bodies is identified, and the *"body of water is so affected by human activity or its natural condition is such that the achievement of the environmental objectives set would be infeasible or disproportionately expensive",* it is possible for an applicant to present further assessments in the context of WFD Regulation 17. Derogation has not been considered herein and would require detailed further analyses of options, environmental impacts and business cases, for WFD and all relevant legislation pertaining to planning and sustainability. For WFD context, WFD Regulation 17 covers part of the procedures for WFD derogation, including but not limited to that *"the environmental and socio-economic needs served by such human activity cannot be achieved by other means which are a significantly better environmental option not entailing disproportionate costs".*

2.6.3 Where the potential for *"failure is the result of new modifications to the physical characteristics of the body of surface water or alterations to the level of the body of groundwater"*, it is possible for an applicant to present further assessments in the context of WFD Regulation 19. Regulation 19 is also still commonly referred to as Article 4.7 of the original EU Directive. Derogation has not been considered herein and as above would require detailed further analyses. For WFD context, WFD Regulation 19 covers part of the procedures for WFD derogation, including but not limited to that:

a. *"All practicable steps are taken to mitigate the adverse impact on the status of the body of water"*;

b. *"The reasons for the modifications or alterations, or for the sustainable development activities, are of overriding public interest"*;

c. *"The benefits to the environment and to society of achieving the environmental objectives are outweighed by the benefits of the new modifications or alterations, or of the sustainable development activities, to human health, to the maintenance of human safety, or (in the case of modifications or alterations) to sustainable development"*;

d. *"The beneficial objectives served by the modifications or alterations, or by the sustainable development activities, cannot, for reasons of technical feasibility or disproportionate cost, be achieved by other means which are a significantly better option"*.

2.7 Desk Study

2.7.1 A desk-based study was carried out to capture information pertaining to the Scheme and support the understanding of water environment 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. WFD status and objectives from the appropriate River Basin Management Plan for Cycle 3 data, available from the Catchment Data Explorer (Ref. 6);

b. Defra's Multi Agency Geographical Information for the Countryside (MAGIC) website, including contemporary Ordnance Survey (OS) maps (Ref. 7);

c. Historical maps (Ref. 8);

d. British Geological Survey online maps (Ref. 9);

e. Soilscapes website (Ref. 10);

f. Aerial photography (Ref. 11);

g. Hydrological information (Ref. 12);

h. Climate information (Ref. 13);

i. Environment Agency Fish and Ecology Data Viewer (Ref. 14); and

j. Environment Agency Water Quality Archive website (Ref. 15).

2.7.2 For a full summary of the baseline conditions for the Study Area refer to **PEIR Volume I Chapter 9: Water Environment**.

2.8 Assumptions and Limitations

2.8.1 This Screening exercise is based on the baseline and Scheme design information available at the time of writing. It is based on the Scheme design set out in **PEIR Volume I Chapter 2: The Scheme**.

2.8.2 At the time of writing, the full details regarding locations and methodologies of construction and installation of the infrastructure, and decommissioning, within the Grid Connection Corridor have not been confirmed. Construction methods including the size and depths of any launch or receiving pits are yet to be confirmed. Smaller watercourse crossings are currently assumed to require open cut installation techniques. As such, at this stage open cut crossings are assumed as a worst-case scenario, but will be reviewed for the WFD assessment provided as part of the ES. For these crossings it is assumed that water flow would be maintained by damming and over pumping. It would be a requirement that the watercourses are reinstated as found and water quality monitoring be undertaken prior to, during, and following on from construction activity.

2.8.3 The PV modules and mounting structures would be offset from watercourses by 10 m to create a buffer zone. A buffer of 9 m from the top of bank is required for the Internal Drainage Board to maintain their channels. The point of measurement will be agreed with the Environment Agency through further consultation, but for the purposes of the assessment it is assumed for all watercourses to be measured from the water's edge under normal flow conditions. This buffer would ensure all construction activities for the installation of PV modules and mounting structures would be offset from surface watercourses, other than where there is a need for crossing of a watercourse (for cabling installation or possible temporary access) of temporary discharge of treated construction site runoff. Any works to enhance watercourses would require direct works to the channel and banks, although given the aim of these works and their small-scale and 'soft-engineering' nature, construction impacts would be minimal. Overall, the purpose of this buffer reduces the risk of any pollutants entering the watercourse directly, whilst also providing space for mitigation measures (e.g. fabric silt fences) should they be required.

2.8.4 The risk from surface water runoff to surface or ground water bodies has been provisionally considered qualitatively on the basis of design principles that will be presented in a Surface Water Drainage Strategy as part of the Flood Risk Assessment which will form a technical appendix to the EIA and WFD assessment, the risk of surface water runoff from new hard standing to surface or ground water bodies will be assessed according to the Simple Index Approach presented in the C753 The Sustainable Drainage Systems (SuDS) Manual (Ref. 16). It is expected that the pollutant risk will not be very high from runoff and that only one layer of treatment may be required. It is also expected that there would be sufficient space within the Site for a treatment solution following SuDS principles. However, there is also potential to use proprietary measures if there is a greater risk or there are localised constraints.

2.8.5 Removal of operational farmland within the Site to accommodate the Scheme may reduce water quality risk to watercourses associated with diffuse agricultural chemicals and possibly reduce soil erosion and the need for local abstractions for irrigation, thereby providing a beneficial impact. As a worst case scenario there may be localised use of spray chemical in small volumes. 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 to watercourses. However, there is limited data on the existing conditions and activities, therefore no further consideration has been given to this potential benefit at this stage.

2.8.6 Welfare facilities for construction staff are not anticipated to discharge into the mains network. At the time of writing, it is anticipated that self-contained portable welfare units which store foul/wastewater for collection/emptying by a registered recycling and waste management contractor. As no discharge to the public foul sewer is anticipated, no further assessment of foul waste from the Scheme is proposed. However, this will be reviewed at the ES stage when further detail is available.

3. WFD Screening

3.1.1 The purpose of the WFD screening stage, as outlined in the Planning Inspectorate Advice Note 18 (Ref. 5), 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. This approach has been taken in this assessment and is outlined below.

3.1.2 A Study Area of 1 km from the Site has been considered in order to identify water bodies that are potentially hydrologically connected to the Scheme and potential works associated with the Scheme that could cause direct impacts.

3.1.3 The screening stage also identifies specific activities of the Scheme that could affect receptor water bodies' WFD status, and which should be carried forward to subsequent stages of the assessment process at the ES stage. Justification is provided where water body receptors are screened out and are not carried forward through the assessment. Water bodies or activities screened 'out' of the assessment will therefore not be considered further at the scoping and impact assessment stages, subject to agreement with the Environment Agency.

3.2 Screening of WFD Water Bodies

3.2.1 The Scheme interacts with four WFD surface water bodies, WFD Screening of which is provided in Table 3-1. Water bodies such as smaller tributaries within each of the WFD water body catchments that may be impacted by the Scheme have been included in this assessment. Any other remaining downstream water bodies not mentioned below are considered sufficiently far downstream to avoid impacts of the Scheme and are therefore screened out of further assessment. Watercourses in the Study Area generally drain to the River Don, which is considered the final receiving water feature that could conceivably be significantly affected.

Table 3-1: Screening of WFD Waterbodies Potentially Impacted by the Scheme

Water Body (ID)	Screening Outcome	Justification
Surface Water Bodies		
Went from Blowell Drain to the River Don (GB104027064260)	In	These 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 the construction, operation and maintenance, and
Don from Mill Dyke to River Ouse (GB104027064243)		
Bramwith Drain from Source to River Don (GB104027063290)		

Water Body (ID)	Screening Outcome	Justification
Ea Beck from the Skell to River Don (GB104027057591)		decommissioning phases of the Scheme.
New Fleet Drain from source to R Went (GB104027063411)	Out	The Scheme does not interact with this water body, located 940 m to the west of the Solar PV Site and there are unlikely to be impact pathways that would adversely affect it. Therefore, they are screened out of this assessment.
Went from Hoyle Mill Stream to Blowell Drain (GB104027063360)	Out	The Scheme does not interact with this water body, located 750 m to the north of the Solar PV Site and there are unlikely to be impact pathways that would adversely affect it. Therefore, they are screened out of this assessment.
Groundwater Bodies		
Aire and Don Sherwood Sandstone (GB40401G701000)	In	This WFD groundwater body underlies the Site and may be affected by a range of activities during the construction, operation and maintenance, and decommissioning phases of the Scheme.

3.3 Screening of Activities

3.3.1 As described in Section 1, the Scheme comprises a number of activities, some of which present a potential risk to the WFD status of water bodies. These components and activities are listed in Table 3-2 together with a screening assessment.

Table 3-2: Screening of the Scheme Against WFD Quality Elements

Activity/Component	Description	Screening Outcome	Justification
Solar photovoltaic modules and mounting structures.	The type of mounting structure to be used is currently being evaluated, but all options will mount Solar PV Panels above ground level on module mounting structures, at a height to be agreed. This would avoid creation of an impermeable surface on the ground or the need for extensive earthworks. The Solar PV Mounting Structure would also not be located within proximity of watercourses within the Site. The Solar PV Mounting Structure would generally be driven or screwed into the ground to an indicative depth of 3 m to 5 m, depending on ground conditions. For further details please see **PEIR Volume I Chapter 2: The Scheme**.	Out: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don (GB104027057591); and e. Aire and Don Sherwood Sandstone (GB40401G701000).	There are unlikely to be any direct hydromorphological impacts to these watercourses given the buffer of 10 m from PV modules and mounting structures, although these are predominantly around watercourses where there would be no construction aside from the crossings for access tracks and cable routes. The pollution risk from this runoff is minimal as Solar PV Panels do not contain any liquid (hazardous or not) that could contaminate rainwater. Solar PV Panels may be cleaned on occasion, but it is assumed at this stage that clean water will be delivered to the site for use in specially adapted tractors and this will not lead to any significant pollution risk or require any local abstraction. The Solar PV Panels would be held above ground typically on narrow (<100 mm) diameter piled legs. This prevents sealing the ground with an impermeable surface and would allow any rainwater to infiltrate into the ground. In order to limit the potential for channelisation from rainfall dripping off the end of the panels, the areas between, under and surrounding the Solar PV Panels would be planted with a native grassland and wildflower mix and the ground shaped with light rilling following natural contours. This planting and shaping would intercept and absorb rainfall running off the panels, preventing it from concentrating and potentially forming channels in the ground. The land will no longer require any organic or inorganic fertilisation or

Activity/Component	Description	Screening Outcome	Justification
			other treatments, therefore pollution associated with agriculture will be removed. Groundwater across most of the Site is anticipated to be generally below 3 m, with some areas along the eastern and southern Site Boundary potentially shallower at 0.6 m. However, as there are no continuous foundations within the design, the shallow, regularly spaced discrete strut PV panel foundations are considered to have a negligible impact on groundwater flow and quality on a water body scale. Therefore, this element is screened out of further assessment.
Supporting infrastructure: inverters, transformers, and switchgear.	Inverters are required to convert the direct current (DC) electricity collected by the PV modules into alternating current (AC), which allows the electricity generated to be exported to the National Grid. Inverters are sized to deal with the level of voltage and current, which is output from the strings of PV modules. Transformers are required to step up the voltage of the electricity generated across the Solar PV Site from low voltage (0.8 kV) produced by the PV panels to medium voltage (33 kV) or high	Out: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don (GB104027057591);	Supporting infrastructure would not be located within close proximity (<10 m) of watercourses so there is no mechanism for direct hydromorphological or water quality impacts to surface water bodies. Transformers would be installed with suitable bunds to contain any oil spillage in case of an oil leakage event. Bunds would be designed to contain at least 110% of the volume of the oil to ensure there is some tolerance to prevent breaching of the bund. As no continuous foundations are in the design and given that groundwater is anticipated to be largely below 3 m across the majority of the Site, the shallow, regularly spaced discrete strut PV panel

Activity/Component	Description	Screening Outcome	Justification
	voltage (400 kV), if required for transmission to the National Grid. Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment. Switchgear is used both to protect and isolate/de-energise equipment to allow work to be done and to clear faults downstream. The Applicant is currently exploring the configuration of these supporting infrastructure. As the Scheme design develops, the configuration of the supporting infrastructure would be determined based upon environmental and technical factors. A reasonable worst-case scenario will be assessed in the ES.	e. Aire and Don Sherwood Sandstone (GB40401G701000); and f. Idle Torne - PT Sandstone Nottinghamshire and Doncaster (GB40401G301500).	foundations are considered to have a negligible impact on groundwater flow. Therefore, this element is screened out of further assessment.
Medium voltage Field Stations within the Solar PV Site.	Low voltage electricity from the inverters is fed into Field Stations which consist of transformers and switchgear. Low voltage electricity passes through 33/0.8 kV transformers and exits	Out: a. Went from Blowell Drain to the River Don (GB104027064260);	Infrastructure would not be located within close proximity of watercourses, therefore there are no mechanisms for hydromorphological and surface water quality impacts to surface water bodies. Therefore, this element is screened out of further assessment.

Activity/Component	Description	Screening Outcome	Justification
	through switchgear into 33 kV cables. Field Stations are typically packaged in containers with an approximate footprint of up to 14 m x 4 m and a height of up to 3.5 m. Field Stations would normally be mounted on concrete foundations, although other types of foundations may be used depending on the local geology. Multiple Field Stations would be distributed throughout the Solar PV Site. The exact number of Field Stations is subject to detailed design studies but will be up to 28. Transformers and switchgear may also be packaged in standalone units. Standalone transformers have a footprint of up to 7 m x 4 m and with a height of up to 3.5 m. Transformer cabins are typically externally finished in keeping with the prevailing surrounding environment, often with a green painted finish. Standalone switchgears would be housed in	b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); and d. Ea Beck from the Skell to River Don (GB104027057591). In: e. Aire and Don Sherwood Sandstone; and(GB40401G701000) .	A Preliminary FRA and Surface Water Drainage Strategy are provided as **PEIR Volume III, Appendix 9-3 and 9-4**, respectively, and will be updated and submitted with the DCO Application to provide for the attenuation of surface water runoff from areas of hardstanding associated with the Field Stations. In accordance with planning policy guidance (Ref. 17), runoff from the Scheme would be attenuated to ensure no increase in surface water discharge rates and to provide water quality treatment of runoff water. Field Stations would be mounted on concrete foundations which would increase impermeable surfaces within the Site leading to potential impacts on underlying groundwater bodies. It is assumed that up to 28 Field Stations may be required across the Solar PV Site, subject to detailed design, therefore, this activity is screened in for further assessment.

Activity/Component	Description	Screening Outcome	Justification
	a cabin of up to 2.5 m by 6.5 m in plan and up to 3.5 m in height.		
Above and below ground On-Site Cables.	Low and medium voltage electrical cabling is required to connect the PV modules and Battery Energy Storage System(s) to inverters and the inverters to the transformers (typically via 0.6/1 kV cables). The dimension of the trenches vary depending on the number of cables or ducts they contain, but would typically be up to 0.8 m in width and 0.6 m to 0.8 m in depth. Cabling between PV modules/Battery Energy Storage System(s) and the inverters would typically be required to be above ground level (along a row of racks), fixed to the mounting structure, and then underground if required (between racks and in the inverter's input). All other cabling would be underground. Medium voltage cables (normally 33 kV) are required between the transformers/switchgears and the substations. These cables would	In: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); and d. Ea Beck from the Skell to River Don (GB104027057591). Out: e. Aire and Don Sherwood Sandstone (GB40401G701000).	Indicative trench depths for the On-Site Cables specify a maximum depth of 1.2 m. Groundwater data available on the Geoindex website (Ref. 9) indicates water table depths of around 3 m across most of the Solar PV Site, with some areas where it may be shallower. However, there would likely be negligible or no impact to the groundwater body when considering the large scale of the WFD groundwater bodies, and so they are screened out at this level of assessment. Any watercourse crossings required for the On-Site Cables will be reviewed as part of the ES and potential impact sources and pathways will be scoped and assessed accordingly. Smaller watercourse crossings are currently assumed to be crossed using open cut installation techniques. Therefore, this activity is screened in for further assessment. Water quality impacts related to construction or decommissioning runoff or spillages that have potential to enter watercourses would be adequately mitigated by measures to be detailed in the Framework Construction Environmental Management Plan (CEMP), which will include a

Activity/Component	Description	Screening Outcome	Justification
	be buried underground. The dimension of the trenches vary depending on the number of cables or ducts they contain but could be typically up to 1.2 m in width and up to 1.2 m in depth. Data cables (typically fibre optic) would be installed, typically alongside electrical cables in order to allow for monitoring during operation, such as the collection of solar data from pyranometers.		Water Management Plan (WMP, and Framework Decommissioning Environmental Management Plan (DEMP), which will be submitted with the ES and secured as a Requirement of the DCO.
Battery Energy Storage System (BESS) Battery Containers	The Scheme would include the provision of BESS Battery Containers, with the specific design to be explored as part of the design process. The BESS Battery Containers would require heating, ventilation, and cooling.	Out: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don	The BESS Area is located more than 25 m from the nearest watercourse, and so there are no mechanisms for hydromorphological impacts to surface water bodies. Therefore, this element is screened out of further assessment. A Preliminary FRA and Surface Water Drainage Strategy are provided as **PEIR Volume III, Appendix 9-3 and 9-4**, respectively, and will be updated and submitted with the DCO Application to provide for the attenuation of surface water runoff from areas of hardstanding associated with the BESS Battery Containers. In accordance with planning water supply, wastewater and water quality guidance (Ref. 17), runoff from the Site would be attenuated to

Activity/Component Description	Screening Outcome	Justification
	(GB104027057591); and e. Aire and Don Sherwood Sandstone (GB40401G701000).	ensure no increase in surface water discharge rates and to provide water quality treatment of runoff water. In the unlikely event of a malfunction to one of the battery arrays, there is a range of integrated controls that would activate depending on the extent and severity of the event. In case the malfunction progresses to a catastrophic fire event and so long as there are no lives under threat, the fire brigade would ensure surrounding elements and structures (intact battery arrays nearby, other electrical equipment, trees etc.) are kept adequately wet and cool to prevent the fire from expanding any further but the battery infrastructure would be allowed to burn within the controlled area. Water will be stored on the site for this purpose and currently it is proposed that it will be captured and temporarily stored in lined swales before testing and being pumped out for off-site disposal if required. BESS Battery Containers will also have an internal and sealed fire suppression system to prevent chemicals from escaping. Consultation with the emergency services are being undertaken as part of the Applicant's pre-application work. Further details regarding management of firewater will be outlined in the Framework Battery Safety Management Plan and Framework Surface Water Drainage Strategy submitted alongside the DCO Application, as appropriate. A concept Drainage Strategy is provided

Activity/Component	Description	Screening Outcome	Justification
			as **PEIR Volume III Appendix 9-4**: **Drainage Strategy**.
On-Site Substation	One 400 kV/33 kV On-Site Substation within the Solar PV Site would receive the electricity from the 33 kV Field Stations. The On-Site Substation would step up the voltage ready to be exported to the National Grid. A typical substation is up to a maximum of approximately 220 m by 130 m in plan with elementsup to 13 m high, securely fenced with a separate control building measuring 20 m by 20 m in plan and up to 6 m high.	Out: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don (GB104027057591); and e. Aire and Don Sherwood Sandstone (GB40401G701000).	Infrastructure would not be located within close proximity of watercourses (the substation is located 200 m from the nearest watercourse), therefore there are no mechanisms for hydromorphological impacts to surface water bodies and this element is screened out of further assessment. A Preliminary FRA and Surface Water Drainage Strategy are provided as **PEIR Volume III, Appendix 9-3 and 9-4**, respectively, and will be updated and submitted with the DCO Application to provide for the attenuation of surface water runoff from areas of hardstanding associated with substations. In accordance with planning water supply, wastewater and water quality guidance (Ref. 17), runoff from the Scheme would be attenuated to ensure no increase in surface water discharge rates and to provide water quality treatment of runoff water. Given the above mitigation, there are considered no mechanisms for impacts to surface water bodies. It is anticipated that foundations for the substations would be above the water table, based on groundwater data available on the Geoindex website (Ref. 9). As such, there would be negligible or no

Activity/Component	Description	Screening Outcome	Justification
			impact to the groundwater bodies, particularly given the large scale of the WFD groundwater bodies.
Electricity export connection to National Grid.	The electricity generated by the Scheme is expected to be imported and exported via interface cables to the National Grid from the On-Site Substation, located in the Solar PV Site. Further information regarding the Grid Connection Corridor is provided in **PEIR Volume I Chapter 2: The Scheme**.	In: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don (GB104027057591); and e. Aire and Don Sherwood Sandstone (GB40401G701000).	The configuration, location and specific option for this element is unknown at the time of writing, however there is potential for excavations and channel crossings to generate impacts upon WFD surface water and groundwater receptors. Therefore, this element is screened in for further assessment.
Operations and Maintenance Hub with welfare facilities within the Solar PV Site.	A permanent operations and maintenance storage area would be established within the Site, adjacent to an existing barn within Field NW08 of the Solar PV Site. The permanent operations and maintenance	Out: a. Went from Blowell Drain to the River Don (GB104027064260);	New structures would not be located within close proximity of watercourses, therefore there are no mechanisms for hydromorphological impacts to surface water bodies. Using existing buildings would not impart additional impacts over and above baseline conditions. Therefore, this element is screened out of further assessment.

Activity/Component	Description	Screening Outcome	Justification
	storage area is expected to be in place during both the construction and the operation of the Scheme.	b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don (GB104027057591); and e. Aire and Don Sherwood Sandstone (GB40401G701000).	There will be welfare facilities associated with the Scheme for one permanent (full time equivalent) member of staff, with some part time day attendance as required, during the operation and maintenance phase. Given the low daily occupancy only small volumes of foul drainage will be generated. At this point in time, it is not known how any wastewater from permanent welfare facilities will be managed. However, this is anticipated to consist of a self-contained independent non-mains cess pit sealed tank, or portaloos with no discharge to ground. These tanks would be regularly emptied under contract with a registered recycling and waste management contractor. As there would be no discharge of foul water to a watercourse, and no discharge to the public foul sewer is anticipated, no further assessment of foul waste from the Scheme is proposed. However, this will be reviewed at the ES stage when further detail is available.
Fencing and security measures.	A security fence would enclose the operational areas of the Solar PV Site. Fencing would be around 2.5 m to 3 m high, with pole mounted internal facing closed circuit television (CCTV) systems deployed around the perimeter.	Out: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243);	Infrastructure would not be located within close proximity of watercourses, therefore there are no mechanisms for hydromorphological impacts to surface water bodies and this element is screened out of further assessment.

Activity/Component	Description	Screening Outcome	Justification
		c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don (GB104027057591); and e. Aire and Don Sherwood Sandstone (GB40401G701000).	
Access tracks	Access tracks would be constructed across the Solar PV Site. These would typically be 4 m wide compacted stone tracks with 1:2 gradient slopes on either side (where required). More detail on the watercourse crossings by access tracks will be defined, and assessed fully, at the ES stage. The access track crossings of watercourses are assumed to be culverts as a worst-case scenario for assessment purposes at this stage.	In: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don (GB104027057591); and	Access tracks cross watercourses within the Site, providing a source of fine material and other contaminants which may have impacts on WFD quality element receptors. Therefore, this element is screened in for further assessment.

Activity/Component	Description	Screening Outcome	Justification
		e. Aire and Don Sherwood Sandstone (GB40401G701000).	
Landscaping and biodiversity enhancement.	The Scheme would involve field boundary enhancement and planting of seed mixes within the Solar PV Site. Enhancements would increase biodiversity and contribute to the Scheme's Biodiversity Net Gain (BNG) requirements.	Out: a. Went from Blowell Drain to the River Don (GB104027064260); b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); d. Ea Beck from the Skell to River Don (GB104027057591); and e. Aire and Don Sherwood Sandstone (GB40401G701000).	Landscape and biodiversity enhancements would not impart direct impacts to WFD quality element receptors. Replacing existing impactful land use practices such as arable and cattle farming with native grasses would have indirect benefits to WFD receptors; therefore, this element is screened out of further assessment.
Surface water drainage and outfalls	The detailed operational drainage design will be carried out pre-construction with the objective of ensuring that drainage of the land to the present level is maintained. It will	In: a. Went from Blowell Drain to the River Don (GB104027064260);	Where practicable, surface water will drain from the Scheme's swale based drainage system to local receiving watercourses via a new ditch, as this avoids the need to construct an engineered outfall. However, if engineered outfalls are required, this

Activity/Component	Description	Screening Outcome	Justification
	follow either the design of a new drainage system taking into account the proposed new infrastructure (access tracks, cable trenches, and structure foundations) to be constructed or, if during the construction of any of the infrastructure there is any interruption to existing schemes of land drainage, new sections of drainage will be constructed.	b. Don from Mill Dyke to River Ouse (GB104027064243); c. Bramwith Drain from Source to River Don (GB104027063290) Tributary of the Till (GB105030062480); and d. Ea Beck from the Skell to River Don (GB104027057591). Out: e. Aire and Don Sherwood Sandstone (GB40401G701000).	could have impact on WFD receptors. Therefore, this element is screened in for further assessment

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 components that were screened in in Table 3-2. The scoping stage assessment is presented in Table 3-3.

Table 3-3: WFD scoping of the Scheme's components and activities against WFD quality elements

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Scoping Outcome	Justification
Biological Quality Elements			
Fish	Yes	In	Temporary blockages in longitudinal connectivity from watercourse crossings. Potential direct impact on fish populations from disturbance of the bed and/or release of contaminated construction site runoff.
Invertebrates	Yes	In	Crossings of water bodies may cause direct mortality of invertebrates or the smothering of habitat with fine sediment and may interrupt continuity of invertebrate communities.
Macrophytes and phytobenthos	Yes	In	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	Out	Intrusive crossing may alter the level of shading to water bodies following potential riparian vegetation removal, watercourse crossings for site access will also locally cause shading. However this will be at a very local scale

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Scoping Outcome	Justification
			and would not alter the water body temperature.
Oxygenation Conditions	Yes	In	Crossings of water bodies may increase loads of fine sediment and organic material to water bodies and decrease levels of dissolved oxygen.
Salinity	No	Out	During operation, surface water runoff from the Scheme may contain pollutants derived from impermeable surfaces (e.g. inert particulates, litter, hydrocarbons, metals, nutrients and de-icing salts) that may alter the salinity of water bodies. However, the Construction Environmental Management Plan (CEMP) will prescribe measures for controlling potentially polluting materials during construction.
Acidification Status	No	Out	No materials that may alter the pH of water bodies are proposed for use in the Scheme. The CEMP will prescribe measures for controlling potentially polluting materials during construction.
Nutrient Conditions	No	Out	Crossings of water bodies may increase sediment loads to watercourses and organic material from site clearance works. However, the impact will be localised, short term and temporary. Overall, the scheme will likely reduce the flux of agricultural diffuse pollutants (sediment and excess nutrients) into watercourses

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Scoping Outcome	Justification
			as they flow through the Order limits. Water quality impacts related to construction or decommissioning runoff or spillages that have potential to enter watercourses would be adequately mitigated by measures to be detailed in the CEMP.
Hydromorphological Quality Elements			
Quantity and Dynamics of Water Flow	No	Out	There is no mechanism for either cable crossing method to impact this element; intrusive crossings 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.
Connection to Groundwater Bodies	No	Out	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 groundwater 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.
River Continuity	Yes	In	Crossings will present a temporary blockage to continuity whilst excavation takes place. Watercourse crossings for site access can also interrupt river continuity.

WFD Quality Element	Potential Risk to Receptor (Yes/No)	Scoping Outcome	Justification
			There is no mechanism for non-intrusive crossings to affect this quality element.
River Depth and Width Variation	Yes	In	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.
Structure and Substrate of the River Bed	Yes	In	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.

4. Desk Study

4.1 General Characteristics

4.1.1 The topography of the Site and its 1 km Study Area is relatively flat, with existing ground levels under 10 m Above Ordnance Datum (AOD) according to online OS mapping.

4.1.2 The area is currently used mainly for agriculture, with a mosaic of mixed agricultural fields. There are several small villages, hamlets and farms located throughout the Study Area.

4.2 Catchment Geology and Soils

4.2.1 The bedrock and superficial geology for the Study Area is identified by the BGS GeoIndex online mapping (Ref. 9). The Solar PV Site and the northern part of the Grid Connection Corridor is underlain by the Sherwood Sandstone Group, while the southern part of the Grid Connection Corridor is underlain by the Chester Formation.

4.2.2 Overlying the bedrock geology, there are several superficial strata identified. The majority of the Solar PV Site and Grid Connection Corridor is underlain by the Hemingbrough Glaciolacustrine Formation comprising laminated clays, silts and sands. Pockets of Breighton Sand Formation (typically consisting of yellowish brown clayey silty sand) are present across the Site. Alluvial deposits associated with the watercourses, in particular, along the

alignment of the River Went at the northern Site Boundary of the Solar PV Site and the River Don valley in the eastern part of the Grid Connection Corridor.

4.2.3 The Soilscape Map viewer (Ref. 10) describes the soils beneath the Site as slowly permeable seasonally wet, loamy and clayey soils with naturally high groundwater and poor drainage characteristics.

4.3 Catchment Hydrology

4.3.1 Based on the Meteorological Office website (Ref. 13), the nearest weather station is located in Robin Hood Doncaster Sheffield Airport, approximately 17 km south east of Fenwick. Using data from this weather station, for the period 1991 to 2020, it is estimated that the Study Area experiences approximately 582 mm of rainfall per year, with it raining more than 1 mm on approximately 113 days per year, which are both low in the UK context. This is relevant to the whole Study Area.

4.3.2 The nearest gauging station to the Solar PV Site is located on the River Went upstream of the Study Area (approximately 3.5 km) at Walden Stubbs (Ref. 12). The catchment area upstream is 83.7 km^2.The daily mean flow is 0.575 cubic metres per second (m^3/sec), with a flow that is exceeded 95% of the time (Q95) of 0.164 m^3/sec, or 164 litres per second. Therefore, the flow in the area of the Site would be expected to be higher than the gauged flow.

4.3.3 The nearest gauging station to the Grid Connection Corridor is located on the River Don, approximately 8 km upstream of the Existing National Grid Thorpe Marsh Substation to the south of the Site at Doncaster (Ref. 12). At this location the daily mean flow is 16.488 cubic metres per second (m^3/sec), with a flow that is exceeded 95% of the time (Q95) of 4.95 m^3/sec. Therefore, the flow in the area of the Site would be expected to be higher than the gauged flow.

4.4 Historical Channel Change

4.4.1 In general, the watercourses within the Study Area have experienced little change over time. The majority of watercourses in the Study Area are straightened channels which have been likely modified for agricultural purposes. There has been little to no change in these channels since the first OS mapping in the early 1900s, therefore it is assumed that these channels would have been modified prior to this. Further detail on the historic channel change of individual watercourses is available in **PEIR Volume I Chapter 9: Water Environment**.

4.5 WFD Status – Surface Water

4.5.1 The Study Area falls within four WFD surface water bodies. There are also several tributaries of these water bodies present within the Study rea; these are predominantly unnamed agricultural ditches, drains, and springs. Further details regarding the WFD classifications of these four water bodies are given in Table 4-1 (Ref. 6).

Table 4-1: WFD Status Summary for Surface Water Bodies

WFD Parameter	Status/Summary			
Water Body ID	GB104027057591	GB104027064243	GB104027063290	GB104027064260
Water Body Name	Ea Beck from the Skell to River Don	Don from Mill Dyke to River Ouse Water Body	Bramwith Drain from Source to River Don	Went from Blowell Drain to the River Don
Water Body Type	River	River	River	River
Water Body Area (km^2)	28.006	77.913	32.611	18.706
Water Body Length (km)	13.964	38.409	4.48	10.156
Hydromorphological Designation	Heavily modified	Artificial	Artificial	Heavily modified
Overall Ecological Status	Moderate	Moderate	Moderate	Moderate
Current Overall Status	Moderate	Moderate	Moderate	Moderate
Status Objective	Good by 2027	Moderate by 2015	Good by 2027	Good by 2027
Biological Quality Elements	Poor	Poor	Good	Poor
Physico-chemical Quality Elements	High	Moderate	Moderate	Moderate
Hydromorphological Quality Elements	Supports Good	Supports Good	Supports Good	Supports Good
Chemical	Fail/Does not require assessment	Fail/Does not require assessment	Fail/does not require assessment	Fail/Does not require assessment

4.5.2 The Study Area also falls within one WFD groundwater body boundary. Further details regarding the WFD classifications of this groundwater body are given in Table 4-2 (Ref. 6).

Table 4-2: WFD Status Summary for Groundwater Body

WFD Parameter	Status/Summary
Water Body ID	GB40401G701000
Water Body Name	Aire and Don Sherwood Sandstone.
Water Body Type	GroundWaterBody
Chemical (GW)	Poor
Chemical Dependent Surface Water Body Status	Good
Chemical Drinking Water Protected Area	Poor
Chemical GWDTEs test	Good
Chemical Saline Intrusion	Good
Chemical Status element	Poor
General Chemical Test	Poor
Overall Water Body	Poor
Prevent and Limit Objective	Active
Quantitative	Poor
Quantitative Dependent Surface Water Body Status	Good
Quantitative GWDTEs test	Good
Quantitative Saline Intrusion	Poor
Quantitative Status element	Poor
Quantitative Water Balance	Poor

5. Summary

5.1.1 A WFD screening and scoping exercise has been undertaken following guidance provided in the Planning Inspectorate Advice Note 18 (Ref. 5). Proposed work activities that could adversely influence water bodies have been outlined and the WFD water bodies that could potentially be affected have been identified through consideration of the 1 km Study Area (Zone of Influence).

5.1.2 The following water bodies have been identified within the Study Area and screened in for further consideration:

a. Went from Blowell Drain to the River Don (GB104027064260);

b. Don from Mill Dyke to River Ouse (GB104027064243);

c. Bramwith Drain from Source to River Don (GB104027063290);

d. Ea Beck from the Skell to River Don (GB104027057591); and

e. Aire and Don Sherwood Sandstone (GB40401G701000).

5.1.3 As design details for the Scheme are finalised for assessment within the ES, the Stage 3 WFD Impact assessment will be advanced (if necessary) and included within a full WFD Assessment that will accompany the DCO Application, as will be agreed during consultation with the Environment Agency:

5.1.4 The Scheme will have to demonstrate that there is no deterioration in any of the identified baseline classifications, and no prevention of future improvement for these classifications. If this cannot be achieved, an Article 4.7 derogation may be required.

5.1.5 These stages of assessment will be undertaken in consultation with the Environment Agency and the Danvm IDB, to ensure an appropriate level of assessment.

6. References

Ref. 1 His Majesty's Stationery Office (HMSO) (2008). The Planning Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/29/pdfs/ukpga_20080029_en.pdf [Accessed 21 December 2023]

Ref. 2 HMSO (2017). Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/407/pdfs/uksi_20170407_en.pdf. [Accessed 21 December 2023].

Ref. 3 Environment Agency (2022) Humber river basin district river management plan: updated 2022. Available at https://www.gov.uk/guidance/humber-river-basin-district-river-management-plan-updated-2022. [Accessed 21 December 2023].

Ref. 4 Environment Agency (2016). Water Framework Directive risk assessment: How to assess the risk of your activity. Available at: https://www.gov.uk/government/publications/water-framework-directive-how-to-assess-the-risk-of-your-activity. [Accessed 21 December 2023].

Ref. 5 The Planning Inspectorate (2017) The Water Framework Directive - Advice note eighteen: The Water Framework Directive. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/. [Accessed 21 December 2023].

Ref. 6 Environment Agency Catchment Data Explorer website. Available at: https://environment.data.gov.uk/catchment-planning/. [Accessed 21 December 2023].

Ref. 7 The Department for Environment, Food and Rural Affairs (Defra)'s Multi Agency Geographical Information for the Countryside website. Available at: https://magic.defra.gov.uk/magicmap.aspx. [Accessed 21 December 2023].

Ref. 8 Historic mapping: National Library of Scotland. Available at: https://maps.nls.uk/ [Accessed 21 December 2023].

Ref. 9 British Geological Survey Borehole and online mapping. Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore/ [Accessed 21 December 2023].

Ref. 10 Soilscapes website. Available at: http://www.landis.org.uk/soilscapes/ [Accessed 21 December 2023].

Ref. 11 Bing Maps. Available at: https://www.bing.com/maps. [Accessed 21 December 2023].

Ref. 12 National River Flow Archive website. Available at: https://nrfa.ceh.ac.uk/. [Accessed 21 December 2023].

Ref. 13 Met Office website (2023), Robin Hood Doncaster Sheffield Airport. Available at: https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcx21p9fr [Accessed 21 December 2023].

Ref. 14 Environment Agency Fish and Ecology Data Explorer. Available at: https://environment.data.gov.uk/ecology/explorer/. [Accessed 21 December 2023].

Ref. 15 Environment Agency Water Quality Archive. Available at: https://environment.data.gov.uk/water-quality/view/landing. [Accessed 21 December 2023].

Ref. 16 Woods Ballard B, Wilson S, Udale-Clarke H et al (2015) The SuDS manual. CIRIA, London. Available at http://www.scotsnet.org.uk/documents/NRDG/CIRIA-report-C753-the-SuDS-manual-v6.pdf. [Accessed 21 December 2023].

Ref. 17 Gov.uk (2019) Water supply, wastewater and water quality Guidance. Available at: https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality. [Accessed 21 December 2023].

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