WHITESTONE SOLAR FARM

Volume 6: Environmental Statement

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Glossary

Term	Meaning
Aquifer	"Underground layers of water-bearing, permeable rock from which groundwater can be extracted" (British Geological Survey).
Cable Corridors	Corridors within which the high voltage cables would be constructed.
Environment Statement (ES)	The Environmental Statement which presents the environmental information relating to the Proposed Development. The ES has been prepared to present information for formal consultation in accordance with current EIA regulation.
Long Lane 400kV Substation	The new 400 kilovolt National Grid substation proposed on land immediately east of Long Lane, Brinsworth, S60 4JJ.
Order Limits	Maximum extent of the Proposed Development comprising the Site and Cable Corridors.
Source Protection Zone	Defined around large and potable groundwater abstractions sites with the purpose to "provide additional protection to safeguard drinking water quality through constraining the proximity of an activity what may impact upon a drinking water abstraction" (Environment Agency).
Study Area	The spatial extent within which environmental receptors may experience likely significant effects from the Proposed Development.
The Applicant	Whitestone Net Zero Ltd.
The Application	The Application submitted to the Secretary of State for a Development Consent Order.
The Proposed Development	The proposed Whitestone Solar Farm.
The Site	The land planned to be used for solar PV array and associated infrastructure, BESS, substations, and landscaping and habitat enhancement. The Site is split into W1, W2, and W3.
Whitestone 1 (W1)	The northern parcels of the Whitestone Solar Farm.
Whitestone 2 (W2)	The middle parcels of the Whitestone Solar Farm.
Whitestone 3 (W3)	The southern parcels of the Whitestone Solar Farm.

Acronyms

Acronym	Meaning
AIL	Abnormal Indivisible Load

Acronym	Meaning
BESS	Battery Energy Storage System
BGL	Below Ground Level
CDC	City of Doncaster Council
CEMP	Construction Environmental Management Plan
DCC	Derbyshire County Council
DCO	Development Consent Order
EA	Environment Agency
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
EQSD	Environmental Quality Standards Directive
EU	European Union
GWDTEs	Groundwater Dependent Terrestrial Ecosystems
HMWB	Heavily Modified Water Bodies
LV	Low Voltage
MV	Medium Voltage
NEDDC	North East Derbyshire District Council
NSIP	Nationally Significant Infrastructure Project
oCEMP	Outline Construction Environmental Management Plan
oSWDS	Outline Surface Water Drainage Strategy
PCS	Power Conversion Stations
PV	Photovoltaic
RBD	River Basin District
RBMC	Rotherham Metropolitan Borough Council
RBMP	River Basin Management Plan
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
WFD	Water Framework Directive
W1	Whitestone 1
W2	Whitestone 2
W3	Whitestone 3

Units

Unit	Meaning
ha	Hectares
km	Kilometres
kV	Kilovolts

Unit	Meaning
m	Metres
MW	Megawatts

10.3 Water Framework Directive Compliance Assessment

Introduction

10.3.1 This Water Framework Directive (WFD) Assessment has been prepared on behalf of Whitestone Net Zero Ltd ('the Applicant') in relation to the Development Consent Order (DCO) Application for the construction, operation, maintenance, and decommissioning of Whitestone Solar Farm (hereafter referred to as the 'Proposed Development').

10.3.2 The purpose of this WFD Assessment is to undertake an evaluation of the Proposed Development's potential effects on WFD designated surface water and groundwater bodies, including an assessment of compliance with applicable WFD objectives and the identification of mitigation measures where necessary. The assessment systematically examines all WFD waterbodies that interact with the Proposed Development, relevant components and activities of the Proposed Development, and their potential to influence WFD classification elements.

10.3.3 The Proposed Development interacts with ten WFD surface watercourses and two WFD groundwater bodies which are all located in the Humber River Basin District (RBD) and detailed in the Humber River Basin Management Plan (RBMP)[1]. The assessment sets out the current and target status of hydrologically connected waterbodies in accordance with the objectives set out in the Humber RBMP.

10.3.4 In accordance with 'The Planning Inspectorate's Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive' (Planning Inspectorate Guidance)[2], a three-stage approach is used to assess impact to WFD waterbodies:

- Stage 1: Screening;
- Stage 2: Scoping; and
- Stage 3: Impact Assessment.

10.3.5 The methodology for each stage is described in paragraphs 10.3.22 to 10.3.50 of this Appendix. The remainder of the Appendix presents the findings of each stage.

10.3.6 This Appendix should be read in conjunction with and draws upon information contained within the following documents:

- **ES Volume 1, Chapter 5: The Proposed Development [EN0110020/APP/6.5]**;
- **ES Volume 2, Chapter 6: Biodiversity and Nature Conservation [EN0110020/APP/6.6]**;
- **ES Volume 2, Chapter 9: Ground Conditions and Land Quality [EN0110020/APP/6.9]**;
- **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]**;
- **EA Volume 3, Appendix 6.13: Fisheries and White Clawed Crayfish eDNA Survey Report [EN0110020/APP/6.20]**;
- **ES Volume 3, Appendix 10.1: Legislation, Policy and Guidance [EN0110020/APP/6.20]**;

- **ES Volume 3, Appendix 2.3: Commitments Register [EN0110020/APP/6.20]**;
- **Outline Construction Environmental Management Plan [EN0110020/APP/5.9]**;
- **Outline Battery Safety Management Plan [EN0110020/APP/5.15]**; and
- **Outline Surface Water Drainage Strategy [EN0110020/APP/5.17]**.

The Order Limits

10.3.7 The extent of the Order Limits is shown in **ES Volume 3, Figure 3.1: Order Limits [EN0110020/APP/6.19]** and the Proposed Development is described in full in **ES Volume 1, Chapter 5: The Proposed Development [EN0110020/APP/6.5]** and shown spatially on the **Works Plans [EN0110020/APP/2.3]**.

The Proposed Development

10.3.8 The Proposed Development involves the construction, operation and maintenance, and decommissioning of more than 100MW of solar photovoltaic (PV) array, Battery Energy Storage System (BESS), onsite substations and supporting infrastructure, and grid connection infrastructure. The grid connection infrastructure would connect the Proposed Development to the National Grid at the new 400 kilovolt (kV) National Grid substation proposed on land immediately east of Long Lane, Brinsworth, S60 4JJ (Long Lane 400kV Substation). National Grid has applied to Rotherham Metropolitan Borough Council (RMBC) for the development of this new substation which is intended by National Grid to be operational in time for the Proposed Development to connect in 2029. This substation is therefore not included in the Proposed Development and is subject to a separate planning application taken forward by National Grid.

10.3.9 As the Proposed Development would have a generating capacity in excess of 100MW, it is considered to be a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008.

10.3.10 The Proposed Development would be located within the Order Limits. The Proposed Order Limits encompass the total area of the project comprising the Site and Cable Corridors. The Site is specifically the land that is planned to be used for solar PV array and associated infrastructure, BESS, substation, landscaping and habitat enhancement. The Site is split into three distinct areas, Whitestone 1 (W1), Whitestone 2 (W2), and Whitestone 3 (W3), which are all connected by the Cable Corridors, as shown in **ES Volume 3, Figure 3.2: Site Referencing [EN0110020/APP/6.19]**.

10.3.11 Highway Works are sections of the highway network that will contain localised improvements, such as improvements to road edge where it is deteriorated, or temporary highway and traffic works required to safely accommodate the Abnormal Indivisible Load (AIL) deliveries. These areas will support the movement of construction vehicles on narrower sections of the local highway network within parts of the construction vehicle routes to the Site (refer to **ES Volume 2, Chapter 13: Traffic and Transport [EN0110020/APP/6.13]**).

Study Area

10.3.12 The Proposed Development is located within the administrative areas of RMBC, City of Doncaster Council (CDC), North East Derbyshire District Council (NEDDC) and Derbyshire County Council (DCC) to the east of Sheffield and Rotherham respectively.

10.3.13 For the purposes of this assessment and consistent with **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]**, a Study Area of 1km around the Order Limits has been considered in order to identify the WFD waterbodies hydrologically connected to the Proposed Development and impacts to them.

10.3.14 The Study Area is presented in **ES Volume 3, Figure 10.1: Water Resources and Flood Risk Study Area [EN0110020/APP/6.19]**.

Legislative Background

10.3.15 The WFD (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000)[3] is a European Union Directive which aims to protect and enhance the quality of the water environment across all European Union (EU) member states. England and Wales have adopted the WFD as national law through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[4]. Following the departure of the United Kingdom from the EU, these regulations continue to apply until they are revoked or superseded by new legislation.

10.3.16 The WFD takes a holistic approach to the sustainable management of water by considering the interactions between surface water, groundwater and water dependent ecosystems. Ecosystem quality is evaluated according to interactions between biological, physico-chemical, and hydromorphological elements, known as ‘quality elements’. The WFD requires waterbodies to be classified according to their current condition and sets a series of objectives for maintaining or improving conditions so that waterbodies maintain or reach ‘good’ status. To achieve good ecological status, good chemical status, or good groundwater status, each element must be assessed as good status or better. If a single element is below the threshold for good status, then the waterbody’s status cannot be classed as good.

10.3.17 Under the WFD, waterbodies are the basic management units, defined as all or part of a river system or aquifer. Waterbodies form part of larger RBDs, for which 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, with interim updates every three years as part of WFD cycles. The current RBMPs are ‘Cycle 3’ and were published in 2022. The first cycle ended in 2015 and for those waterbodies which did not achieve good status, the target date was extended to either 2021 (Cycle 2) or 2027 (Cycle 3).

10.3.18 In England, the Environment Agency (EA) is the competent authority for the implementation and enforcement of the WFD in England; consenting responsibilities for works on Main Rivers and Ordinary Watercourses are addressed separately through the relevant permitting regimes and are not determinative of WFD compliances. However, WFD 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.

10.3.19 As part of its regulatory and statutory consultee role on development applications and environmental permitting, under the Environmental Permitting Regulations (England and Wales) 2016[5]; the EA and WFD partnering organisations must consider whether proposals for new developments have the potential to:

- Cause a deterioration of any quality element of a water body from its status or potential; and
- Prevent future attainment of good status or potential where not already achieved.

10.3.20 Regulation 33 of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 states that each public body *"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 DCO Application must therefore consider the potential of the Proposed Development to impact upon water body improvement priorities as outlined in the Humber RBMP which provides a clear indication of how the objectives set for the river basin are to be reached within the required timescale.

10.3.21 Planning Inspectorate Guidance also states that in determining whether a development is compliant or non-compliant with the WFD objectives for a waterbody, the EA 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 waterbodies, where relevant.

Methodology

10.3.22 There is no fixed methodology for WFD assessments. The nature of the water environment and the breadth of the legislation means that assessments are tailored to projects on a case-by-case basis.

10.3.23 Guidance on how to undertake WFD assessments can be found in the 'Water Framework Directive risk assessment - How to assess the risk of your activity'[6] and Planning Inspectorate Guidance. These guidance documents have informed the approach taken in this assessment.

10.3.24 A stepwise approach consisting of screening, scoping, and impact assessment phases is generally followed 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.

10.3.25 The WFD surface water and groundwater assessment draws upon a number of other disciplines in determining the potential impact to the environmental objectives of the waterbodies that have the potential to be impacted. These include hydrology, ecology, and hydrogeology.

Stage 1: Screening

10.3.26 The aim of screening is to identify the:

- WFD designated waterbodies hydrologically connected to the Proposed Development and which could therefore be impacted; and
- Components and activities of the Proposed Development that could result in impacts to the WFD quality elements and thus classifications.

10.3.27 The aim is to 'screen out' unimpacted waterbodies and aspects of the Proposed Development that do not require further consideration.

10.3.28 In line with **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]**, a Study Area of 1km around the Order Limits has been considered to identify waterbodies that are hydrologically connected to the Proposed Development.

10.3.29 The screening identifies the specific activities needed to construct and operate the components of the Proposed Development, and which could affect the receiving WFD waterbody. These activities are carried forward to subsequent stages of the assessment process.

10.3.30 The screening takes into consideration the embedded mitigation set out in detail in **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]**, with a focus on direct vs indirect impacts between the WFD waterbodies and components / activities of the Proposed Development to streamline this WFD assessment.

10.3.31 As set out in **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]**, one of the embedded mitigation measures is a commitment to a 10m offset of all Proposed Development components (with the exception of watercourse crossings) from all surface waterbodies. Where a component / activity is >10m from a WFD surface waterbody, or on a tributary watercourse, the effects to the WFD quality elements are considered indirect and therefore are screened out of this WFD assessment because these effects are assessed fully in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**.

10.3.32 Direct impacts to WFD groundwater or surface waterbodies are however screened into further assessment.

Stage 2: Scoping

WFD Determination of Waterbody Classification

Surface Water

10.3.33 Surface water bodies can have an overall status classed as high, good, moderate, poor or bad, reflecting increasing levels of deviation from near - natural conditions as a result of anthropogenic pressures.

10.3.34 The WFD classifications for surface waterbodies are based on assessment of the following quality elements:

- **Ecological:**
  - Biological quality elements comprising fish, invertebrates, and macrophytes and phytobenthos;
  - Physio-chemical quality elements comprising dissolved oxygen, nutrient conditions (ammonia, phosphate), temperature, and pH conditions; and
  - Hydromorphological quality elements comprising the hydrological regime of the river.
- **Chemical:**
  - Pollutant concentrations.

10.3.35 The chemical quality refers to the Environmental Quality Standards Directive (EQSD)[7] for river basin specific pollutants. These standards specify maximum concentrations for specific water pollutants. The WFD operates on a 'one out, all out' basis, so if one such concentration is exceeded, then the water body will not be classed as having a good status. The pure chemical status of surface waters is therefore classified as either good or fail with the physical - chemical quality indicators being classified as either high, good, moderate, poor or bad. Chemical status is assessed via the analysis of water samples against approximately 50 priority substances.

10.3.36 Surface water bodies that have been substantially altered for purposes such as navigation, water storage or flood defence are designated as heavily modified water bodies (HMWBs). Unlike natural water bodies, HMWBs are assessed against 'good potential' rather than ecological status and must achieve at least good potential by their assigned objective year.

Groundwater

10.3.37 For groundwater bodies, the classification is either good or poor and is based on:

- **Quantitative** status which considers elements such as impacts of saline intrusion, ability to serve groundwater abstractions, and ability to support groundwater dependent terrestrial ecosystems (GWDTEs); and
- **Chemical** status which refers to the EQSD for river basin specific pollutants and the priority substances specified under the WFD.

Application of Classification Parameters to Scoping

10.3.38 The scoping phase of this WFD assessment involves considering each of the above quality elements in relation to the Proposed Development components / activities and the potential for a derogation in them. Those with potential to have a derogation are scoped in, and those not likely to are scoped out.

Stage 3: Impact Assessment

10.3.39 Once the WFD waterbodies of interest and components / activities have been screened in, and the WFD quality elements of interest scoped in, a detailed impact assessment is conducted.

10.3.40 The impact assessment considers in more detail how the activities screened in will impact each of the quality elements, and thus if there is likely to be a derogation in WFD classification as a result of the Proposed Development.

10.3.41 The assessment takes into account the embedded mitigation committed to in **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]**.

Compliance with RBMP Improvement Measures and Actions

10.3.42 As outlined in paragraph 10.3.20, in accordance with Regulation 33 of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, the DCO Application must consider the potential for the Proposed Development to affect waterbody improvement priorities and associated objectives established within the relevant RBMP.

10.3.43 As such, this assessment also appraises the Proposed Development against the environmental objectives and programme of measures set out in the Humber RBMP, consistent with the requirement for decision-makers to consider effects on RBMP objectives and measures for Nationally Significant Infrastructure Projects.

10.3.44 The appraisal considers whether the Proposed Development would interact with, constrain, or prevent delivery of the RBMP objectives, recognising that the Proposed Development is not responsible for delivering RBMP actions.

10.3.45 Measures and catchment partnership actions were identified from the EA Catchment Data Explorer and associated catchment partnership pages and screened for relevance to the types of pressures that could plausibly be influenced by the Proposed Development (e.g. physical modification at crossing locations, sediment mobilisation and pollution risk during construction, and maintenance of conveyance and channel stability during operation). Each relevant measure/action was then qualitatively appraised as either: (i) no interaction / not relevant (no pathway), (ii) no adverse interaction (neutral), or (iii) potential to support delivery (where a relevant, secured design feature or commitment would contribute).

Further Assessment if WFD Derogation is Identified

10.3.46 In accordance with Planning Inspectorate Guidance, where the impact assessment identifies that there will be a deterioration to WFD waterbodies and it is not possible to mitigate the impacts, the Proposed Development would need to be assessed in the context of derogation provisions of Article 4.7 of the WFD.

Baseline Data Collection

10.3.47 A desk-top study was carried out to develop an understanding of the baseline WFD conditions which included a review of the EA WFD datasets, as well as other EA datasets, and OS mapping to understand the wider hydrological context. A detailed overview of the baseline hydrology of the Study Area is supplied in **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]**.

10.3.48 A full summary of the ecological and hydrogeological baseline conditions for the Study Area, including data sources used and field surveys undertaken, are found in **ES Volume 2, Chapter 6: Biodiversity and Nature Conservation [EN0110020/APP/6.6]** and **ES Volume 2, Chapter 9: Ground Conditions and Land Quality [EN0110020/APP/6.9]**.

10.3.49 Information on the Proposed Development including proposed activities with the potential to impact the WFD waterbodies were garnered from **ES Volume 1, Chapter 5: The Proposed Development [EN0110020/APP/6.5].**

10.3.50 This WFD assessment has been informed by ecological surveys within the Order Limits. These surveys were used specifically to inform the assessment of biological quality elements, as defined under the WFD and listed in paragraph 10.3.33 and have been used to support the impact assessment in paragraphs 10.3.76 to 10.3.81. The ecology surveys were undertaken within the Order Limits as defined at the time of survey. Although subsequent refinements have been made to the Order Limits (refer to **ES Volume 1, Chapter 4: Alternatives and Design Evolution [EN0110020/APP/6.4]**), the surveys encompassed the principal watercourses with potential to be affected by the Proposed Development.

Assumptions and Limitations

10.3.51 This assessment refers to and uses publicly available data sources, relying on the accuracy of that data.

10.3.52 The assessment relies on the Proposed Development design information available at the time of writing, as set out in **ES Volume 1, Chapter 5: The Proposed Development [EN0110020/APP/6.5].**

10.3.53 Additionally, it is based on the assumptions set out in **ES Volume 2, Chapter 6: Biodiversity and Nature Conservation [EN0110020/APP/6.6]** and **ES Volume 2, Chapter 9: Ground Conditions and Land Quality [EN0110020/APP/6.9]**.

10.3.54 A worst-case scenario has been considered for assessment in accordance with the "Rochdale Envelope" approach as described in Section 5.2 of **ES Volume 1, Chapter 5: The Proposed Development [EN0110020/APP/6.5]**.

10.3.55 This assessment relies on the assumption that that the embedded mitigation committed to throughout the Environmental Impact Assessment (EIA) is implemented during construction, operation, maintenance, and decommissioning.

Stage 1: Screening

Screening of WFD Waterbodies

10.3.56 The Proposed Development interacts with a number of WFD designated waterbodies. Screening of these waterbodies is presented in **Table 10.2.1**.

10.3.57 The location of the WFD surface waterbodies and catchments, and the groundwater bodies relative to the Order Limits are shown in **ES Volume 3, Figure 10.2: WFD Designated Watercourses [EN0110020/APP/6.19]** and **ES Volume 3, Figure 10.13: WFD Groundwater Bodies Classifications [EN0110020/APP/6.19]** respectively.

10.3.58 Detailed works plans referencing, as referred to throughout **Table 10.2.1** and **Table 10.2.2**, with respect to works plans within the Site and Order Limits, is presented in **Works Plan [EN0110020/APP/2.3]**.

10.3.59 In line with the methodology set out in this Appendix where a component / activity is >10m from a WFD surface waterbody, or on a tributary watercourse, it is considered an indirect effect and is screened out because these effects are assessed fully in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**. Direct impacts to WFD groundwater or surface waterbodies are however screened into further assessment.

Table 10.2.1 Screening of WFD Waterbodies Potentially Impacted by the Proposed Development

Waterbody ID	Screening Outcome	Justification
Surface Waterbodies		
Hooton Brook from Source to River Don (GB104027057430)	**Out**	No components of the Proposed Development or proposed activities will directly impact this water body. The only hydrological linkage between the Proposed Development and Hooton Brook

		from Source to River Don (GB104027057430) (Hooton Brook) is via an ordinary watercourse that drains into the Hooton Brook. The Proposed Development intersects this ordinary watercourse (tributary of the Hooton Brook) at a Cable Corridor (Cable Corridor route reference CRB) crossing 12 and 13 (as shown in **ES Volume 3, Figure 10.15: Watercourse Crossings [EN0110020/APP/6.19]**), more than 1km upstream of the WFD waterbody. The cable will be installed beneath this ordinary watercourse using a trenchless method and will be associated with launch and receptor pits. The launch and receptor pits will be >10m from the ordinary watercourse and as such the indirect implications on water quality and geomorphology, and the mitigation required, are covered in detail in **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10].** The Chapter concludes there will be a negligible magnitude of impact to the ordinary watercourse. Therefore, due to the combination of the activities being on the ordinary, tributary watercourse of the Hooton Brook, and negligible significance of effect which will not transmit derogations downstream so as to affect the WFD classification of the Hooton Brook, it has been screened out of further assessment.
Kearsley Brook (GB104027064244)	**Out**	There are no direct interactions between the Proposed Development and the Kearsley Brook (GB104027064244) (Kearsley Brook). The indirect implications on water quality and geomorphology, and the mitigation required, are covered in detail in **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10].** Therefore, this watercourse is screened out of further assessment.
Oldcotes Dyke Catchment (tributary of the River Ryton) (GB104028058230)	**Out**	Newhall Dike, designated as part of the Oldcotes Dyke Catchment (tributary of the River Ryton) (GB104028058230) (Oldcotes Dyke), is located approximately 345m east of the nearest Cable Corridor (Cable Corridor route reference CRB), linking W1 and W2

		and flows in an easterly direction, away from the Proposed Development. It is not therefore in direct hydrological connectivity with the Proposed Development. The Kingsforth Brook and Hellaby Brook discharge into the Oldcotes Dyke. Both are associated with crossings: a proposed access track crossing in W2 (reference 1 - 2A) over the Kingsforth Brook (crossing 6), which is a proposed culvert crossing; and Cable Corridor route reference CRB, which intersects the Hellaby Brook at crossing 14 and crossing 15. Crossing 14 is proposed to be undertaken using trenchless techniques, unless the watercourse is dry at the time of works, in which open-cut trenching will be undertaken. Crossing 15 is proposed to be trenched. The indirect implications on water quality and geomorphology, and the mitigation required, are covered in detail in **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10].** The Chapter concludes there will be a negligible magnitude of impact to the tributary watercourses. Therefore, due to the combination of the activities being on tributary watercourses of the Oldcotes Dyke, and negligible significance of effect which will not transmit derogations downstream so as to affect the WFD classification of the Oldcotes Dyke, it has been screened out of further assessment.
Anston Brook from Source to River Ryton (GB104028058210)	**In**	Anston Brook from Source to River Ryton (GB104028058210) (Anston Brook) flows southeasterly through W2, passing adjacent to proposed solar areas (reference 1 – 2F) and substation (reference 4 – 2B). Along its course, it then intersects the existing access road, which is proposed for upgrade (crossing 9 and crossing 10), before continuing southeast to intersect the Cable Corridor (Cable Corridor reference CRK – 1, crossing 2), a proposed trenchless cable crossing and the solar PV access road (crossing 3), a proposed bridge crossing. As a result, the Brook may be directly impacted

		by construction, operational and decommissioning activities.
Pigeon Bridge Brook from Source to River Rother (GB104027057730)	**Out**	Pigeon Bridge Brook from Source to River Rother (GB104027057730) (Pigeon Bridge Brook) is located approximately 1km west of W2 (reference 1 - 2G) and is hydrologically disconnected from the Proposed Development, with the A57 road and Goose Carr Lane being between the Order Limits and this watercourse. Given this separation from all construction, operational and decommissioning activities, there are no plausible impact pathways therefore Pigeon Bridge Brook is screened out.
Ulley Brook from Source to River Rother (GB104027057740)	**In**	Ulley Brook from Source to River Rother (GB104027057740) (Ulley Brook) flows west through W2, passing adjacent to solar areas (references 1- 2C and 1 – 2B), before intersecting the Cable Corridor (Cable Corridor reference CRF, crossing 21), a proposed trenchless crossing. As a result, Ulley Brook may be directly impacted by construction, operational and decommissioning activities.
River Rother, Doe Lea to Don (GB104027057772)	**Out**	River Rother, Doe Lea to Don (GB104027057772) (River Rother) is downstream of the Ulley Brook but at a distance of greater than 1km. The River Rother is therefore indirectly linked to the Proposed Development by the Ulley Brook. As the Ulley Brook (row above) has been screened into this assessment, and there are no direct interactions with the Proposed Development for the Rive Rother, in line with the methodology detailed in this Appendix, this watercourse is screened out of further assessment.
Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	**In**	Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161) (Broad Bridge Dyke) flows northwards through W3, intersecting the proposed solar PV access road (crossing 7), a proposed bridge crossing; adjacent to solar area (reference 1 - 3A) and continues along its course adjacent to solar area (reference 1–3A). Owing to this direct hydrological interaction with the Proposed Development, the Dyke may be affected by construction, operational and decommissioning activities.

Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162)	**In**	Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) (River Ryton) flows easterly adjacent to the Chesterfield Canal from a point approximately 2km east of W3. It is intersected by Cable Corridor (Cable Corridor reference CRL, crossing 23), a proposed trenchless crossing, thus with potential for direct impact during construction, operation and decommissioning activities.
Chesterfield Canal, upper section (GB70410526)	**In**	Chesterfield Canal, upper section (GB70410526) (Chesterfield Canal) originates approximately 0.6km northeast of W3, receiving inflows from the Broadbridge Dyke Feeder and continues easterly before intersecting Cable Corridor (Cable Corridor reference CRL, crossing 23), a proposed trenchless crossing. As a result, the Chesterfield Canal may be directly impacted during construction, operation and decommissioning activities.
Groundwater Bodies		
Don & Rother Millstone grit & Coal Measures (GB40402G992300)	**In**	The majority of the Proposed Development overlies the Don & Rother Millstone Grit and Coal Measures Groundwater Body. As such, there is potential for impacts at the water body scale arising from activities undertaken during construction, operation and decommissioning.
Idle Torne – Magnesian Limestone (GB40401G300600)	**In**	The Proposed Development is partly underlain by the Idle – Torne Magnesian Limestone Groundwater Body. As such, there is potential for impacts at the water body scale arising from activities undertaken during construction, operation and decommissioning.
Aire & Don Magnesian Limestone (GB40401G700900)	**Out**	The Aire & Don Magnesian Limestone Groundwater Body lies within the Study Area approximately 747m to the northeast of the W1, but does not underlie any element of the Proposed Development. There is no hydraulic connectivity or plausible impact pathway between the Proposed Development and this groundwater body, as all works are wholly located within the Don & Rother Millstone Grit and Coal Measures and Idle Torne – Magnesian Limestone

		groundwater bodies and any such effects are anticipated to be fully dissipated over this distance. As such, no derogations are anticipated at the water body scale and it is thus screened out of further assessment.

Screening of Components / Activities

10.3.60 **Table 10.2.2** sets out the main components of the Proposed Development and the activities associated with their construction and operation that present potential risks to the WFD quality elements and thus overall classification of the screened in waterbodies.

10.3.61 In line with the methodology set out in this Appendix, the screening takes into consideration the embedded mitigation set out in detail in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**. A high level summary of relevant mitigation is set out below to justify the screening decision, but the detailed measures which will form the **oCEMP [EN0110020/APP/5.9]** are set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10].** The screening below, like with the screening of waterbodies, focusses on the direct vs indirect nature of impacts to WFD waterbodies from the components / activities.

Table 10.2.2 Screening of the Proposed Development Activities

Component / Activity	Description & Mitigation	Screening Outcome	Justification
Solar PV modules and solar PV mounting structures which combine to form solar PV arrays.	Solar PV modules will be mounted on solar PV frames which are typically comprised of a metal frame with narrow diameter legs. The solar array legs will be pile driven to a maximum depth of 4m below ground level (BGL). As set out in **Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**, the design principals of the Proposed Development will ensure the solar arrays are set back 10m from all waterbodies. Ground disturbance for solar array construction will be minimal as supports are pile driven into the ground without the need for excavation of foundations. Therefore, sediment generation which can degrade the ecological quality elements of surface waterbodies will be minimal. Additionally, there will be a Construction Environmental Management Plan (CEMP) in place throughout construction to mitigate against sediment transfer to surface waterbodies. The minimal groundworks for solar panel installation also limits the potential for pollutant generation which could wash towards watercourses and also degrade the	**Out**	As referenced in the **Outline Design Parameters [EN0110020/APP/7.3]**, all solar PV arrays will be set back at least 10m from all surface water WFD waterbodies, there are no direct impacts to them. All indirect impacts, aka the risk of sediment and pollutant wash out towards surface waterbodies which could affect the ecological and chemical WFD quality elements, will be managed through the CEMP during construction. The detailed mitigation and these indirect effects are assessed in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**. With regards to effects on groundwater bodies, the solar PV arrays represent a negligible footprint. Any structures are not considered sufficiently deep or concentrated to form preferential pathways to groundwater or meaningfully influence lateral groundwater flows. Given the relatively shallow depth of installations (up to 4m), there will be negligible impact to the groundwater body, particularly given the large scale of the WFD groundwater bodies. The CEMP will be followed, as such, any potential water quality issues relating to

Component / Activity	Description & Mitigation	Screening Outcome	Justification
	ecological and chemical quality elements of the WFD classification. The **Outline Construction Environmental Management Plan [EN0110020/APP/5.9]** (oCEMP) will be followed, which will inform the CEMP. The CEMP will be adhered to throughout construction to mitigate against pollution of surface waterbodies and groundwater bodies. During operation, no area of permanent hardstanding is associated with the solar PV arrays which could increase runoff. The solar panels can generate localised preferential flowpaths which can wash sediment and pollutants towards watercourses, as well as change water quantity. However, as set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]** and the **Outline Surface Water Drainage Strategy [EN0110020/APP/5.17]** (oSWDS), the land under the solar arrays will be allowed to naturally revegetate and there will be strategic sustainable drainage systems (SuDS) features in place to minimise runoff and sediment / pollutant wash out to WFD waterbodies. Solar panels are robustly manufactured and require considerable force to break. In the event of damage, they do not contain water		construction runoff, spillages will be mitigated. An **oCEMP [EN0110020/APP/5.9]** has been submitted alongside this Application.

Component / Activity	Description & Mitigation	Screening Outcome	Justification
	soluble chemicals that could infiltrate groundwater.		
Power Conversion Stations (PCS)	PCS can include inverters, transformers and switchgear. These components serve multiple purposes to manage the output generated by solar PV modules. The PCS will be placed on hardstanding foundation which will not typically exceed depths of 2m BGL but could also include piling to depths of up to 3m BGL. As set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**, the design principles of the Proposed Development will ensure the PCS are set back 10m from all waterbodies. Ground disturbance will be required to form the hardstanding for PCS with the potential for sediment generation and introduction of pollutants which could wash towards surface waterbodies. Land compaction will also increase runoff rates. These can impact the ecological and chemical quality elements of the WFD classification. Any excavations also may entail dewatering activities and potential for pollutants to directly enter groundwater, impacting the	**Out**	As referenced in the **Outline Design Parameters [EN0110020/APP/7.3]**, all PCS will be set back at least 10m from all surface water WFD waterbodies, there are no direct impacts to them. All indirect impacts, such as the risk of sediment and pollutant wash out towards surface waterbodies, which could affect the ecological and chemical WFD quality elements, will be managed through the CEMP during construction. The detailed mitigation and these indirect effects are assessed in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10].** With regards to effects on groundwater bodies, the PCS foundations represent a negligible footprint and will therefore not restrict infiltration to the underlying groundwater body. Any structures are not considered to be sufficiently deep or concentrated to form preferential pathways to groundwater or meaningfully influence lateral groundwater flows. Given the relatively shallow depth of foundations (2 to 3m), there will be negligible impact to the groundwater body, particularly given the

Component / Activity	Description & Mitigation	Screening Outcome	Justification
	chemical quality elements of the WFD classification. The CEMP, which will be informed by the **oCEMP [EN0110020/APP/5.9]** will be followed. The CEMP will be adhered to such that pollution and sediment is managed and does not result in degradation of WFD waterbodies. Permanent hardstanding during operation will increase runoff which can wash sediment and pollutants towards watercourses, as well as change water quantity. However, SuDS will be in place during operation to prevent impacts to WFD waterbodies.		large scale of the WFD groundwater bodies. The CEMP will be followed, as such, any potential water quality issues relating to construction runoff, spillages will be mitigated. An **oCEMP [EN0110020/APP/5.9]** has been submitted alongside this Application.

Substations	The Primary Substation (reference 4 – 2A) will act as the combiner point for the interconnection cables from W1, W2 and W3, consolidating them into a single cable connection to the National Grid at the Long Lane 400 kV Substation. Two satellite substations (references 4 – 1A and 4 – 2B) will also be required to collect the Medium Voltage (MV) cables from the Low Voltage (LV) / MV transformers and will house the transformers needed to step up the voltage for onward transmission to the primary substation. The satellite substation compounds may additionally include buildings for substation control and operation, welfare facilities and storage areas for equipment required for the operation and maintenance of the solar infrastructure. Substations and associated infrastructure within the substation compounds will be located on concrete foundations with a maximum depth of 5m BGL, unless pile foundations are required, which could reach up to 15m BGL. As set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**, the design principals of the Proposed Development will ensure the substations are set back 10m from all waterbodies.	**In (for Groundwater)** Don & Rother Millstone grit & Coal Measures (GB40402G992300) Due to the potential depth of pilings (15m BGL).	As referenced in the **Outline Design Parameters [EN0110020/APP/7.3]**, all substations will be set back at least 10m from all surface waterbodies, there are no direct impacts to them. Indirect impacts, such as the risk of sediment and pollutant wash out towards surface waterbodies which could affect the ecological and chemical WFD quality elements, will be managed through the CEMP during construction. SuDS will then be in place during operation. Wastewater generated by permanent welfare facilities within satellite substation compounds during operation will be collected and disposed of off-site by a suitably licensed carrier, ensuring no discharge to surface waterbodies. The detailed mitigation and these indirect effects are assessed in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10].** With regards to groundwater, no substation foundations fall within the Idle Torne – Magnesian Limestone (GB40401G300600) groundwater body. As a result, no direct interaction or impact on this groundwater body is anticipated. However, the pile foundations are likely to encounter groundwater at the foundation depth (potential depth of pilings up to 15m

	Ground disturbance will be required to form the foundations and hardstanding for substations with the potential for sediment generation and introduction of pollutants which could wash towards surface waterbodies. Land compaction will also increase runoff rates. These can impact the ecological and chemical quality elements of the WFD classification. Any excavations also may entail dewatering activities and potential for pollutants to directly enter groundwater, impacting the chemical quality elements of the WFD classification. The CEMP, which will be informed by the **oCEMP [EN0110020/APP/5.9]**, will be adhered to such that pollution and sediment is managed and does not result in degradation of WFD waterbodies. Permanent hardstanding during operation could increase runoff which can wash sediment and pollutants towards watercourses, as well as change water quantity. However, as detailed in the oSWDS, SuDS will be in place during operation to prevent derogation of WFD waterbodies.		BGL). Thus, there may be potential direct impact to the Don & Rother Millstone grit & Coal Measures WFD groundwater body. An **oCEMP [EN0110020/APP/5.9]** has been submitted alongside this Application.

BESS	The BESS will be located adjacent to the primary substation (as described in the previous row) in W2. The BESS units will be located on foundations of hardstanding which would not typically exceed depths of 2m BGL. Pile foundations could reach up to 4m BGL should they be required following ground investigation. As set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**, the design principals of the Proposed Development will ensure the BESS are set back 10m from all waterbodies. Ground disturbance will be required to form the foundations and hardstanding for substations with the potential for sediment generation and introduction of pollutants which could wash towards surface waterbodies. Land compaction will also increase runoff rates. These can impact the ecological and chemical quality elements of the WFD classification. Any excavations also may entail dewatering activities and potential for pollutants to directly enter groundwater, impacting the chemical quality elements of the WFD classification. However, the oCEMP will inform the CEMP which will be adhered to such that pollution	**Out**	As referenced in the **Outline Design Parameters [EN0110020/APP/7.3]**, the BESS will be set back at least 10m from all surface water WFD waterbodies, there are no direct impacts to them. All indirect impacts, aka the risk of sediment and pollutant wash out towards surface waterbodies which could affect the ecological and chemical WFD quality elements, will be managed through the oCEMP during construction. SuDS will then be in place during operation to manage sediment, pollution, and firewater as detailed in the mitigation and the indirect effects assessed in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10].** With regards to groundwater, the BESS foundations represent a negligible footprint. Any structures are not considered to be sufficiently deep or concentrated to form preferential pathways to groundwater or meaningfully influence lateral groundwater flows. Given the relatively shallow depth of foundations (2 to 4m (up to 4m if pile foundations are required)), there will be negligible impact to the groundwater body, particularly given the large scale of the WFD groundwater bodies. The CEMP will be followed, as such, any potential water quality issues relating to construction runoff,

	and sediment is managed and does not result in degradation of WFD waterbodies. Permanent hardstanding during operation will increase runoff which can wash sediment and pollutants towards surface waterbodies, as well as change water quantity. However, SuDS will be in place during operation to prevent derogation to WFD waterbodies. In the very unlikely event of a fire within the BESS compound or thermal runaway, there is potential, if no precautions were taken, for surface water quality to be affected by the accidental releases of chemicals which can enter the SuDS, surface waterbodies, and groundwater. This can impact the chemical quality elements of the WFD classification. However, as set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**, the oSWDS, and oBSMP; the BESS compound will be impermeably lined, with runoff directed to a detention basin sized to accommodate the required firewater containment volume. An automatically operated penstock will be installed on the basin outfall to isolate the drainage network in the event of a fire to prevent contamination, with a manual override provided as a secondary safeguard. Fire water runoff will be removed from Site by tanker ensuring it is not discharged into any surface waterbody.		spillages will be mitigated. An **oCEMP [EN0110020/APP/5.9]** has been submitted alongside this Application.

Component / Activity	Description & Mitigation	Screening Outcome	Justification
Construction Compounds	Primary construction compounds will be set up for storing of materials, plant and equipment during the construction phase. These compounds will also house staff welfare facilities, parking areas for construction workforce, waste storage and wheel washing areas. Once construction is nearing completion, these construction compounds will be removed. To support the primary construction compounds, secondary construction compounds areas will be required for the temporary storage of infrastructure before it is installed as part of the Proposed Development. A maximum of ten secondary construction compounds will be used for the construction of the Proposed Development. As set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**, the design principals of the Proposed Development will ensure the compounds are set back 10m from all waterbodies. Ground disturbance will be required to form the compounds with the potential for sediment generation and introduction of pollutants which could wash towards surface waterbodies. Land compaction will also	**Out**	As referenced in the **Outline Design Parameters [EN0110020/APP/7.3]**, the Construction Compounds will be set back at least 10m from all surface water WFD waterbodies, there are no direct impacts to them. All indirect impacts, aka the risk of sediment, pollutant, and wastewater wash out towards surface waterbodies which could affect the ecological and chemical WFD quality elements, will be managed through the CEMP during construction as detailed in the mitigation and the indirect effects assessed in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10].** The compounds will not be in place during operation presenting no risk. With regards to groundwater, due to the shallow depth of infrastructure, it is unlikely that groundwater in the bedrock aquifers will be encountered by the construction compounds. While there may be some potential to encounter superficial groundwater, given the limited extent of excavation for foundations anticipated (1 to 2m) there will be negligible impact to the ground waterbody, particularly given the large scale of the WFD groundwater bodies.

Component / Activity	Description & Mitigation	Screening Outcome	Justification
	increase runoff rates. These can impact the ecological and chemical quality elements of the WFD classification. However, the oCEMP which will inform the CEMP will be adhered to such that pollution and sediment is managed and does not result in degradation of WFD waterbodies. Welfare facilities housed in the construction compounds can also introduce pollutants, specifically wastewater which can increase nutrient loading in surface waterbodies which can impact WFD quality elements. However, during construction and operation wastewater from welfare facilities will be disposed of by a suitably licenced carrier and not discharged to surface waterbodies. Additionally, a Water Consumption Plan will be developed to fully identify the water consumption needs and sources of water such that there is no derogation of water quantity.		The CEMP will be followed, as such, any potential water quality issues relating to construction runoff, spillages will be mitigated. An **oCEMP [EN0110020/APP/5.9]** has been submitted alongside this Application.
Interconnection Cables	Onsite electrical cabling will be required to interconnect W1, W2 and W3 and to export power to the grid via underground cables. Cable installation across WFD waterbodies will comprise trenchless techniques, with the final construction methodology and locations confirmed at the post consent detailed design stage.	**In (for Surface Water) –** Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River	There will be no direct impacts to the hydromorphological parameters of surface waterbodies as trenchless crossings are being used under all WFD surface watercourses. Underground cables emit electromagnetic fields (EMF) and therefore pose a risk to migratory fish, salmonids, through temporary behavioural changes. In line with the

Component / Activity	Description & Mitigation	Screening Outcome	Justification
	All WFD watercourses will be crossed using trenchless methods. This means there will be no direct impacts to watercourses. However, trenchless crossings will require appropriately sized launch and reception pits. Launch and reception pits will be temporary, only in place during construction. They will be located at least 10m from surface waterbodies. Ground disturbance will be required to establish the pits which can generate sediment and are areas of potential pollutants which can impact the ecological and chemical quality elements of the WFD classification. During construction, the oCEMP which will inform the CEMP will set out how sediment and pollutant risks will be managed to prevent impacts to surface waterbodies. However, there is a risk of a "frac-out" event which can impact surface water and groundwater quality through the release of drilling muds which may contain contaminants. Cables installed via trenchless methods will be positioned at least 1.5m beneath the watercourse bed and will avoid disturbance within 10m of the bank top.	Rother (GB104027057740) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526) **(and Groundwater) –** Don & Rother Millstone grit & Coal Measures (GB40402G992300) Idle Torne – Magnesian Limestone (GB40401G300600)	**Outline Design Parameters [EN0110020/APP/7.3]**, cables will be laid at a minimum of 1.5m below watercourses at a depth where EMF levels are close to background levels and no impact on ecological parameters such as salmon and migratory fish is anticipated. The 10m buffer between the launch and reception pits and WFD waterbodies means there are indirect links to the surface WFD waterbodies. The impacts resulting from the risk of sediment and pollutant wash out towards surface waterbodies which could affect the ecological and chemical WFD quality elements, will be managed through the oCEMP during construction as detailed in the mitigation and the indirect effects assessed in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10].** The pits will not be in place during operation presenting no risk. However, despite the launch and reception pits buffer, there is still a risk to surface water and groundwater as a result of a "frac-out" event. Therefore, cable crossings are screened into further assessment.

Component / Activity	Description & Mitigation	Screening Outcome	Justification
Access tracks and watercourse crossings for access tracks and haul roads	New or upgraded internal access tracks will be required across the Site. These tracks will generally measure 3.5m - 6m in width and will be constructed using permeable aggregate, incorporating localised SuDS features (e.g., swales and infiltration trenches) to manage surface water runoff and reduce the potential for sediment mobilisation. All access tracks will maintain a 10m buffer from surface waterbodies except at designated crossing points. Existing access roads and tracks will be utilised wherever practicable to minimise the extent of new track construction, thereby reducing ground disturbance, soil compaction, and the need for additional watercourse crossings. Where crossings are unavoidable, these will comprise either open span-bridge structures (for WFD watercourses) or culverts, with the final crossing type determined at the post consent detailed design stage and in consultation with the relevant authorities. Construction of new watercourse crossings and the upgrade of existing crossings will require works directly within and on the banks	**In (for Surface Water) -** Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	There will be direct impacts to WFD surface watercourses. The Proposed Development includes two upgrades to existing crossings of the Anston Brook, the construction of a new open - span bridge crossing of the Anston Brook, and a bridge crossing of the Broadbridge Dyke Feeder. Although the final design and location of crossings will be confirmed at the post-consent detailed design stage, for assessment purposes, a reasonable worst-case scenario has been adopted. This comprises potential in-channel works associated with the construction of single-span bridge crossings, including installation of bridge abutments and associated works that may affect watercourse banks within the Broadbridge Dyke Feeder and Anston Brook, and potential in-channel works for upgrades to an existing culvert within the Anston Brook. The minimal ground disturbance means that there are no anticipated mechanism for impacts to the groundwater body. The use of permeable aggregate and SuDs features, as well as the size of the track or road footprint in comparison to the areal extent of the groundwater body means that there should be negligible impact to infiltration to groundwater.

Component / Activity	Description & Mitigation	Screening Outcome	Justification
	of watercourses as well as disturbance of the watercourse bed, and / or works on the bank top. Watercourse crossing construction can increase sediment mobilisation due to disturbance of bed and / or bank material. The use of heavy plant, construction materials, and earthworks at watercourses increases the risk of sediment transport to watercourses and the accidental release of hydrocarbons or other construction related contaminants. Water quantity can also be impacted if there is a need to create a temporary cofferdam or use overpumping to allow construction of the crossing. These will adversely impact the ecological and chemical quality elements of the WFD classification.		

Stage 2: Scoping

10.3.62 This stage of the assessment identifies the interaction between the screened in waterbodies and Proposed Development components / activities identified in **Table 10.2.1** and **Table 10.2.2**. This stage details how these components / activities may contribute to potential derogation of WFD quality elements and thus classification of the screened in WFD waterbodies.

10.3.63 The following surface water and groundwater bodies have been screened into the assessment:

- Anston Brook (Source to River Ryton) (GB104028058210);
- Ulley Brook (Source to River Rother) (GB104020757740);
- Broad Bridge Dyke Catchment (tributary of the Chesterfield Canal) (GB104028058161);
- Ryton (from Chesterfield Canal to Anston Brook Water Body) (GB104028058162);
- Chesterfield Canal, upper section (GB70410526);
- Don & Rother – Millstone Grit & Coal Measures groundwater body (GB40402G992300); and
- Idle Torne – Magnesian Limestone groundwater body (GB40401G300600).

10.3.64 In addition, the following Proposed Development components / activities have been screened in due to their potential to effect WFD quality elements of the screened in WFD waterbodies:

- Substations;
- Interconnection cables; and
- Access tracks and watercourse crossings for access tracks and temporary haul roads.

10.3.65 The linkage between the Proposed Development components / activities and WFD classification elements is presented in **Table 10.2.3**.

Table 10.2.3 Scoping of the WFD Quality Elements

WFD Quality Element	Potential Risk to Receptor (Yes / No)	Scoping Outcome	Justification
Biological Quality Elements (Surface Waterbodies)			
Fish	Yes	**In**	Fish population densities can be impacted through noise, changes to sediment volume or type, changes to flow type or volume, or any degradation caused by pollution inputs from drilling fluids. In addition, fish including migratory fish such as salmonids, lamprey and eel can be affected by electromagnetic fields from buried electrical cables impacting their ability to migrate upstream. As discussed in **ES Volume 3, Appendix 6.13: Fisheries and White Clawed Crayfish eDNA Survey Report [EN0110020/APP/6.20]** screened in watercourses hold fish populations and some watercourses are key tributaries to downstream main rivers. Ulley Brook, River Ryton and Chesterfield Canal all returned positive eDNA results for fish species including protected and priority species such as: *Cottus spp,* likely the European Bullhead and *Orcorhynchus* spp likely rainbow trout or pink salmon in 2025. Anston Brook returned no amplifiable DNA, although this does not confirm absence of species and Broadbridge Dyke sample was lost in transit. It is not proposed to block watercourses during construction however any temporary blockages may result in interference with some fish population movements. Watercourse crossings and interconnection cables may result in noise, sediment and potential impacts of pollution temporarily during construction. In operation EMF from cables could harm the natural movement of migratory fish to or from their spawning grounds and poorly installed culverts can create a barrier to fish passage through alteration of the morphology of the river channel. Therefore, this element is scoped in.
Invertebrates	Yes	**In**	Aquatic macroinvertebrate populations can be harmed or killed through spilled drilling fluids or pollutants from HDD, sedimentation and direct loss of habitat during construction. In addition, indirect habitat loss can occur due to shading and subsequent impacts on plant growth. Furthermore, the creation of new culverts, if installed poorly can alter the morphology and flow of watercourses leading to indirect habitat loss in the vicinity of the works and scouring of

			substrate areas upstream and downstream. Therefore, this parameter is scoped in.
Macrophytes and phytobenthos	Yes	**In**	Macrophyte and phytobenthos populations can be impacted through spilled drilling fluids or pollutants from HDD crossings, sedimentation and direct loss of habitat during construction could result in smothered leaves. Shading from proposed new crossings could additionally remove availability for suitable habitat and reducing plant growth or direct loss of habitat/removal during construction. In addition, potential for nutrient loading through sediment movement may affect species growth. Furthermore, the creation of new culverts, if installed poorly can alter the morphology and flow of watercourses leading to indirect habitat loss in the vicinity of the works and areas substrate scouring upstream and downstream. Therefore, this parameter is scoped in.
Physio-Chemical Quality Elements (Surface Waterbodies)			
Temperature	No	**Out**	Temperature can be altered through changes to channel shading and water levels and flow rate. Installation of like for like culverts at existing crossings or new open - span bridges for access track or haul roads will cause localised shading, and thus temperature differences. In addition, small areas of vegetation removal to facilitate watercourse crossing during construction could increase sun light levels and temperature. However, the area of shading or increased sunshine will be negligible compared to the total length of the surface waterbody. As set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]** watercourse crossings will be designed to have the appropriate capacity to maintain water levels and flows. A Water Consumption Plan will also be developed to fully identify the water consumption needs and sources of water such that there are no impacts to water quantity. Therefore, with the maintenance of water quantity, continual movement of water through crossings, and limited shading, water temperatures are expected to regulate such that there will not be a derogation to this WFD quality element.

Dissolved Oxygen	Yes	**In**	Dissolved oxygen concentrations can be impacted through increased sediment and organic material entry into waterbodies as this can decrease levels of dissolved oxygen in surface water. Watercourse crossing construction will directly result in sediment input to watercourses as a result of works within the channel, therefore this parameter is scoped in.
pH	Yes	**In**	Surface water pH can alter if there is a release of sediment and / or organic material and / or construction materials such as concrete into waterbodies. Watercourse crossing construction will directly introduce this material to the channel, therefore this parameter is scoped in.
Nutrient Conditions (ammonia and phosphate)	Yes	**In**	Nutrient loading can occur if there is a release of sediment and / or organic material into waterbodies. Watercourse crossing construction will directly introduce this material to the channel, therefore this parameter is scoped in.
Hydromorphological Quality Elements (Surface Waterbodies) **Supporting Element for Ecological Status Only Except where Classification is High or Water Body is HMWB**			
Hydrological regime element			
Quantity and dynamics of water flow	Yes	**In**	Watercourse crossings required for access tracks and haul roads could alter water quantity and flow dynamics during construction and operation through the impoundment of water and / or constriction of the channel.
River continuity	Yes	**In**	River continuity under the WFD covers the physical structure of the waterbody including water flow and sediment movement, as well as habitat and ecological continuity. Watercourse crossings could interrupt river continuity by constricting flows, damaging aquatic habitats, preventing fish passage, and increasing sediment within the channel through construction activities and scour.
Morphological Conditions			
River depth and width variation	Yes	**In**	Watercourse crossings could directly impact river width and depth through the structure itself but also through erosion associated with structures. Additionally,

			sedimentation into watercourses can have hydromorphological derogations e.g. an increase in sedimentation can reduce channel depth.
Structure and Substrate of the Riverbed	Yes	**In**	Watercourse crossings can alter sediment transport through changes to flow and thus bed substrate within the vicinity of crossings. Culverts which do not have open bottoms also directly change the watercourse bed.
Riparian zone structure	Yes	**In**	Installation of watercourse crossings will directly impact the riparian zone. The implications of this include removal of vegetation which removes the natural buffering of sediment and pollutants, as well as erosion of channel banks and changes to bank profiles which can increase sediment within waterbodies and change channel widths and depths.
Groundwater Quality Elements			
Quantitative Elements	No	**Out**	Quantitative elements can be impacted if dewatering is required, if elements of the scheme are likely to reduce recharge to groundwater or alter the groundwater flow. Short and long term effects on quantitative elements from the Proposed Development will be minimal due to the shallow foundations, which will ensure minimal dewatering, the implementation of the oCEMP if dewatering is required, and negligible effect of the scheme on infiltration to groundwater.
Chemical Elements	Yes	**In**	Intrusive works have the potential to effect groundwater quality elements either by mobilising ground contamination already present onsite, or by creating a preferential pathway to the underlying groundwater body. The majority of intrusive works are shallow, however the maximum 15m piling depth for the onsite substation has the potential to create a preferential pathway into the underlying groundwater.

Baseline For Screened in WFD Waterbodies

Surface Waterbodies

10.3.66 The EA Catchment Data Explorer[8] shows that the Study Area is located within the Don and Rother Management Catchment and the Idle and Torne Management Catchment of the Humber RBD.

10.3.67 The Humber RBD covers 26,100km^2 and is comprised of 18 management catchments and contains 982 water bodies defined as “surface waters” and 51 water bodies defined as “groundwater”.

10.3.68 In 2019, 100% of the district’s surface waterbodies were classified as fail for chemical status and 15% of the district’s surface waterbodies were assessed as being in good condition for ecological status.

10.3.69 W1 is located entirely within the Don and Rother Management Catchment, along with a short section of the associated Cable Corridor connecting W1 to W2, corridor reference CRB. The western extents of W2 and W3 also fall within this catchment.

10.3.70 The eastern extents of W2 and W3 sit within the Idle and Torne Management Catchment, which also includes substantial sections of the Cable Corridors connecting W1, W2 and W3, corridor references CRB and CRC.

10.3.71 There are ten WFD designated watercourses within the Study Area as set out in **Table 10.2.1**. Further details on the proximity of the WFD watercourses to the Order Limits, flow directions, and flow conditions are provided in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10].** The surface waterbodies and are shown in **ES Volume 3, Figure 10.2: WFD Designated Watercourses [EN0110020/APP/6.19]**.

10.3.72 As set out in **Table 10.2.1**, five of the ten surface waterbodies within the Study Area have been screened into further assessment. Further details regarding the WFD classifications of the screened in waterbodies are given in **Table 10.2.4.** The current data is Cycle 3 which was published in 2022, however, it is noted that the chemical WFD parameter is from 2019, as this is the last (most recent) reporting cycle regarding chemical classifications.

Table 10.2.4 Summary of the WFD Status of the Screened in Surface Waterbodies

WFD Parameter	Status / Summary				
Water Body ID	GB104028058210	GB104027057740	GB104028058161	GB104028058162	GB70410526
Water Body Name	Anston Brook from Source to River Ryton	Ulley Brook from Source to River Rother	Broad Bridge Dyke Catchment (tributary of Chesterfield Canal)	Ryton from Chesterfield Canal to Anston Brook Water Body	Chesterfield Canal, upper section
Water Body Type	River	River	River	River	Canal
Water Body Catchment Area (km^2)	21.629	15.166	12.600	8.400	No catchment area
Water Body Length (km)	13.691	5.646	3.292	3.084	26.115
Hydromorphological Designations	Not designated, artificial or heavily modified	Heavily modified	Not designated artificial or heavily modified	Not designated artificial or heavily modified	Artificial
Overall Ecological Status	Moderate	Good	Poor	Good	Good
Status Objective	Good by 2027	Not stated	Not stated	Not stated	Not stated
Biological Quality Elements	Moderate	Poor	Poor	Good	Not assessed
Physico-chemical Quality Elements	Moderate	Good	Good	High	Good
Hydromorphological Quality Elements	Supports Good	Supports Good	Supports Good	Supports Good	Not assessed
Chemical (2019)	Fail	Fail	Fail	Fail	Fail

Groundwater Bodies

10.3.73 The Study Area is underlain by three WFD groundwater bodies, two which have been screened in as set out in **Table 10.2.1**. The EA Catchment Data Explorer shows the majority of W1 and the entirety of W2 and W3 are located within the "Don & Rother Millstone Grit & Coal Measures" WFD groundwater body. The far east of W1 is located within the "Idle Torne - Magnesian Limestone" groundwater body. Both groundwater bodies have an overall status of poor. A summary of the WFD status of the groundwater bodies are given in **Table 10.2.5**.

10.3.74 The groundwater bodies are shown in **ES Volume 3, Figure 10.13: WFD Groundwater Bodies Classifications [EN0110020/APP/6.19]**.

10.3.75 The groundwater bodies are within the Humber RBD which in 2019, 49% of groundwater bodies were classified as good for chemical status and 80% of the district's groundwater bodies were assessed as having good quantitative status.

Table 10.2.5 Summary of the WFD Status of the Screened in Groundwater Bodies

WFD Parameter	Status / Summary	
Water Body ID	GB40402G992300	GB40401G300600
Water Body Name	Don & Rother Millstone grit & Coal Measures	Idle Torne – Magnesian Limestone
Chemical (GW)	Poor	Poor
Chemical Dependent Surface Water Body Status	Poor	Good
Chemical Drinking Water Protected Area	Good	Good
Chemical Groundwater Dependent Terrestrial Ecosystems (GWDTE) Test	Good	Good
Chemical Saline Intrusion	Good	Good
Chemical Status Element	Poor	Poor
General Chemical Test	Poor	Poor
Overall Water Body Status	Poor	Poor
Prevent and Limit Objective	Active	Active
Quantitative	Good	Good
Quantitative Dependent Surface Water Body Status	Good	Good
Quantitative GWDTEs test	Good	Good

Quantitative Saline Intrusion	Good	Good
Quantitative Status Element	Good	Good
Quantitative Water Balance	Good	Good

Stage 3: Assessment of Effects on WFD Quality Elements (Impact Assessment)

10.3.76 This stage of the assessment brings together the components and activities of the Proposed Development that have been screened into further consideration, and the WFD quality elements scoped in, to assess the effects of the Proposed Development on WFD surface water and groundwater bodies. The assessment focuses on whether the Proposed Development would result in deterioration of any WFD quality element or prevent the achievement of the relevant WFD objective (status or potential), and is presented in **Table 10.2.6** and **Table 10.2.7** for surface waterbodies and groundwater bodies respectively.

10.3.77 In accordance with the methodology set out in this Appendix**,** the assessment takes account of the embedded mitigation measures incorporated within the design of the Proposed Development and set out in detail in **ES Volume 2, Chapter 6: Biodiversity and Nature Conservation [EN0110020/APP/6.6]** and **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]**. A high-level summary of relevant mitigation is set out below to explain the outcome of the assessment against WFD quality elements, but the details of the measures, including those to within the **oCEMP [EN0110020/APP/5.9]**, are set out in **ES Volume 2, Chapter 10, Water Resources and Flood Risk [EN0110020/APP/6.10]**.

Table 10.2.6 Assessment of Effects on WFD Quality Elements (Surface Water)

WFD Parameter	Source of Impact	Screened In / Impacted WFD Waterbody	Mitigation	Compliance Assessment
Biological Quality Parameters				
Fish	**Cable Crossings** Cable crossings beneath WFD watercourses will be undertaken using trenchless techniques to a minimum 1.5m below bed level. There will be no direct in-channel works; however, temporary launch and reception pits are required, which involve localised ground disturbance and construction plant activity. A potential source of effect on fish populations would be the mobilisation of sediment or organic material towards surface water, or, in a worst-case scenario, an inadvertent release of drilling fluids (frac-out) during trenchless installation during construction. The impact of noise and drilling could cause distress to fish populations during construction.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	• Siting launch and reception pits a minimum of 10m from surface waterbodies in accordance with the **Outline Design Parameters [EN0110020/APP/7.3]**; • Implementation of sediment and pollution control measures in accordance with the **oCEMP [EN0110020/APP/5.9]**; • Adherence to industry best practice for trenchless installation as detailed in the **oCEMP [EN0110020/APP/5.9]**, including measures to prevent and control drilling fluid releases, including proposals for works to be undertaken under dry weather conditions when most of the watercourses may be dry or under very low flow conditions, and thus fish will not be present at the time of works; • Recommended for watercourses which contain populations of migratory fish to lay cables at a depth of at least 1.5m in accordance with the **Outline Design Parameters [EN0110020/APP/7.3]** and recent published study James *et al.*, (2026) to avoid impact on these species; and • Launch and reception pits are temporary features and will be removed following construction.	With the implementation of embedded mitigation, any effects on fish populations would be limited to highly localised, short-term changes during construction. No effects are anticipated during operation, maintenance, and decommissioning with cables left in situ following construction. The Proposed Development will not result in deterioration of the fish population supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works within and on the banks of watercourses including disturbance of the bed and banks. This can temporarily mobilise sediment into the water column which could negatively impact some fish populations. If works are undertaken within the river channel there is potential for direct impact to fish populations and additionally through the creation of dry working areas during construction. The use of construction plant and materials within and adjacent to watercourses also presents a risk of accidental release of fuels or other construction related pollutants which could temporarily have negative direct impacts including mortality on fish populations during construction. The access track crossings will be permanent but the primary risk to fish will be during	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• Suitable sediment and pollutant capture and control measures within the channel at crossing construction points to prevent excessive degradation in water quality and therefore to fish populations in accordance with the **oCEMP [EN0110020/APP/5.9]**; • Pollution prevention plan in place to prevent spills and leaks of chemicals towards watercourses; • The haul road crossings will be temporary and removed after the cable has been laid; • The crossings will be designed in line with industry guidance with sufficient capacity to maintains flows and therefore fish populations during construction; • If dry working areas are required during construction, then prior to dewatering of any bunded area, an appropriately qualified electrofishing specialist will conduct a fish rescue from the bunded area, any time the bund is breached the rescue will be repeated. All required EA permissions will be in place prior to dewatering in accordance with best practice; • When dewatering the bunded area, if necessary, pump inlets will be fitted with a mesh screen to prevent uptake of fish and other aquatic species; • Water pumped from the aquatic area if needed, will be discharged onto an open area of the riverbank through a sedimat and allowed to filter onto the ground to prevent sedimentation onto the channel;	During construction, there is potential for short-term, localised effects on fish populations as a result of sediment mobilisation associated with watercourse crossing works. With the implementation of embedded mitigation, these effects would be temporary and limited in extent. During operation, access track crossings will be designed to maintain appropriate flows and avoid conditions that would impact fish populations. The construction and operation of watercourse crossings will not result in deterioration of fish populations and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.

	construction when there are greater sedimentation and pollutant risks.		• Any in-river works will be completed with care so as disturbance to channel material is minimised; • At no time will watercourse be obstructed in such a way that fish and other fish cannot pass; and • In vicinity of works water quality monitoring will be undertaken to ensure that sedimentation and pollution of the watercourse is minimised and corrective actions can be completed immediately if needed.	
Invertebrates	**Cable Crossings** Cable crossings will be undertaken using trenchless techniques beneath WFD surface waterbodies. There will be no direct in-channel works; however, temporary launch and reception pits are required, which involve localised ground disturbance and construction plant activity. A potential source of effect on invertebrate's populations would be the mobilisation of sediment or organic material towards surface water, or, in a worst-case scenario, an inadvertent release of drilling fluids (frac-out) during trenchless installation. The impact of noise and drilling could cause distress to invertebrate's populations.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	• Siting launch and reception pits a minimum of 10m from surface waterbodies in accordance with the **Outline Design Parameters [EN0110020/APP/7.3]**; • Implementation of sediment and pollution control measures in accordance with the **oCEMP [EN0110020/APP/5.9]**; • Adherence to industry best practice for trenchless installation, including measures to prevent and control drilling fluid releases in accordance with the **oCEMP [EN0110020/APP/5.9]**; and • Launch and reception pits are temporary features and will be removed following construction.	With the implementation of embedded mitigation, any effects on invertebrate's populations would be limited to highly localised, short-term changes during construction. No effects are anticipated during operation. The Proposed Development will not result in deterioration of the invertebrate population supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works within and on the banks of watercourses including disturbance of the bed and banks. This can temporarily mobilise sediment into the water column which could negatively impact some invertebrate populations. If works are undertaken within the river channel there is potential for direct impact to invertebrate populations and additionally through the creation of dry working areas during construction. The use of construction plant and materials within and adjacent to watercourses also presents a risk of accidental release of fuels or other construction related pollutants which could temporarily have negative direct impacts	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• Suitable sediment and pollutant capture and control measures within the channel at crossing construction points to prevent excessive degradation in water quality and therefore to invertebrate's populations; • Pollution prevention plan in place to prevent spills and leaks of chemicals towards watercourses; • The haul road crossings will be temporary and removed after the cable has been laid; and • The crossings will be designed in line with industry guidance with sufficient capacity to maintains flows and therefore invertebrate's populations during construction.	During construction, there is potential for short-term, localised effects on invertebrate's populations as a result of sediment mobilisation associated with watercourse crossing works. With the implementation of embedded mitigation, these effects would be temporary and limited in extent. During operation, access track crossings will be designed to maintain appropriate flows and avoid conditions that would impact invertebrate's populations. The construction and operation of watercourse crossings will not result in deterioration of invertebrate's populations and will not

	including mortality on invertebrate populations during construction. The access track crossings will be permanent but the primary risk to invertebrate's populations will be during construction when there are greater sedimentation and pollutant risks			prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
Macrophytes and Phytobenthos	**Cable Crossings** Cable crossings will be undertaken using trenchless techniques beneath WFD surface waterbodies. There will be no direct in-channel works; however, temporary launch and reception pits are required, which involve localised ground disturbance and construction plant activity. A potential source of effect on macrophytes and phytobenthos populations would be the mobilisation of sediment or organic material towards surface water, or, in a worst-case scenario, an inadvertent release of drilling fluids (frac-out) during trenchless installation. The impact of these activities could cause harm to macrophytes and phytobenthos populations.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	• Siting launch and reception pits a minimum of 10m from surface waterbodies in accordance with the CEMP and **Outline Design Parameters [EN0110020/APP/7.3]**; • Implementation of sediment and pollution control measures in accordance with the **oCEMP [EN0110020/APP/5.9]**; • Adherence to industry best practice for trenchless installation, including measures to prevent and control drilling fluid releases; and • Launch and reception pits are temporary features and will be removed following construction.	With the implementation of embedded mitigation, any effects on macrophytes or phytobenthos would be limited to highly localised, short-term changes during construction. No effects are anticipated during operation. The Proposed Development will not result in deterioration of the macrophyte or phytobenthos population supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works within and on the banks of watercourses including disturbance of the bed and banks. This can temporarily mobilise sediment into the water column which could negatively impact some macrophyte and phytobenthos populations. If works are undertaken within the river channel there is potential for direct impact to macrophyte and phytobenthos populations and additionally through the creation of dry working areas during construction. The use of construction plant and materials within and adjacent to watercourses also presents a risk of accidental release of fuels or other construction related pollutants which could temporarily have negative direct impacts including mortality or loss of habitat on	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• Suitable sediment and pollutant capture and control measures within the channel at crossing construction points to prevent excessive degradation in water quality and therefore to macrophytes and phytobenthos populations; • Pollution prevention plan in place to prevent spills and leaks of chemicals towards watercourses; • The haul road crossings will be temporary and removed after the cable has been laid; and • The crossings will be designed in line with industry guidance with sufficient capacity to maintains flows and therefore macrophytes and phytobenthos populations during construction.	During construction, there is potential for localised effects on macrophytes and phytobenthos populations as a result of sediment mobilisation associated with watercourse crossing works. With the implementation of embedded mitigation, these effects would be temporary and limited in extent. The creation of culverts could result in a small number of lost macrophytes due to the impact of shading reducing availability of habitat, however this impact would be small in scale and would not impact WFD classification. During operation, access track crossings will be designed to maintain appropriate flows and avoid conditions that would

	macrophyte and phytobenthos populations during construction. The access track crossings will be permanent but the primary risk to macrophytes and phytobenthos populations will be during construction when there are greater sedimentation and pollutant risks.			impact macrophytes and phytobenthos populations. The construction and operation of watercourse crossings will not result in deterioration of macrophytes and phytobenthos populations and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
Physio-Chemical Quality Elements (Supporting Elements)				
Dissolved Oxygen Dissolved oxygen is a physico-chemical supporting quality element under the WFD and can be affected where sediment or organic material enter a waterbody and temporarily increase biological oxygen demand.	**Cable Crossings** Cable crossings will be undertaken using trenchless techniques beneath WFD surface waterbodies. There will be no direct in-channel works; however, temporary launch and reception pits are required, which involve localised ground disturbance and construction plant activity. A potential source of effect on dissolved oxygen would be the mobilisation of sediment or organic material towards surface water, or, in a worst-case scenario, an inadvertent release of drilling fluids (frac-out) during trenchless installation.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	• Siting launch and reception pits a minimum of 10m from surface waterbodies; • Implementation of sediment and pollution control measures in accordance with the **oCEMP [EN0110020/APP/5.9]**; • Adherence to industry best practice for trenchless installation, including measures to prevent and control drilling fluid releases; and • Launch and reception pits are temporary features and will be removed following construction.	With the implementation of embedded mitigation, any effects on dissolved oxygen would be limited to highly localised, short-term changes during construction. No effects are anticipated during operation. The Proposed Development will not result in deterioration of the dissolved oxygen supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works within and on the banks of watercourses including disturbance of the bed and banks. This can temporarily mobilise sediment into the water column. The use of construction plant and materials within and adjacent to watercourses also presents a risk of accidental release of fuels or other construction related pollutants which could temporarily affect dissolved oxygen concentrations during construction. Access track crossings will be permanent but will be designed in accordance with best practice to maintain flows and avoid	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• Implementation of in-channel and bankside sediment and pollution control measures during crossing construction; Timing of works, where practicable, to avoid periods of higher flow; Reinstatement of watercourse beds and banks following construction; Post-construction measures (e.g. temporary silt control) to allow disturbed sediments to stabilise; Pollution prevention measures to manage fuels and construction materials in proximity to watercourses; • Haul road crossings will be temporary and removed following construction; and • Access track crossings will be designed in accordance with best practice to maintain flows and avoid conditions that could affect dissolved oxygen during operation.	During construction, there is potential for short-term, localised effects on dissolved oxygen concentrations as a result of sediment mobilisation associated with watercourse crossing works. With the implementation of embedded mitigation, these effects would be temporary and limited in extent. During operation, access track crossings will be designed to maintain appropriate flows and avoid conditions that could affect dissolved oxygen concentrations. The construction and operation of watercourse crossings will not result in

	conditions that could affect dissolved oxygen during operation.			deterioration of the dissolved oxygen supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
pH pH is a physico-chemical supporting quality element under the WFD and may be affected where construction activities result in the mobilisation of sediment or the accidental release of alkaline materials into surface water.	**Cable Crossings** Cable crossings will be undertaken using trenchless techniques beneath WFD surface waterbodies, with no direct in-channel works. Temporary launch and reception pits will be required, involving localised ground disturbance and construction plant activity. A potential source of effect on pH would be the mobilisation of sediment or alkaline materials towards surface water, or, in a worst-case scenario, an inadvertent release of drilling fluids (frac-out) during trenchless installation.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	• Siting launch and reception pits a minimum of 10m from surface waterbodies; • Implementation of appropriate sediment and pollution control measures in accordance with the **oCEMP [EN0110020/APP/5.9]**; • Strict management of construction materials and drilling fluids to prevent release to surface waters; • Adherence to industry best practice for trenchless installation to prevent frac-out events; and • Launch and reception pits are temporary features and will be removed following construction.	With the implementation of embedded mitigation, any effects on pH would be limited to localised, short-term alkaline excursions during construction. No effects on pH are anticipated during operation, as trenchless crossings do not involve permanent structures within the channel and the temporary construction features will be removed. The installation of trenchless cable crossings will not result in deterioration of the pH supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works directly within and on the banks of watercourses as well as disturbance of the watercourse bed. This will temporarily mobilise sediment into the channel. Construction materials and heavy plant also increases the risk of accidental release of hydrocarbons or other construction related contaminants into the water column. The installation of crossing structures (e.g. culverts or bridge foundations) may involve the use of concrete or other construction materials. If inadvertently released to surface water, such materials could result in short-term, localised alkaline pH excursions during construction. Access track crossings will be permanently installed but designed in accordance with best practice to maintain flows and avoid conditions that could affect pH during operation.	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• Implementation of in-channel and bankside sediment and pollution control measures during crossing construction; • Management of construction materials to prevent release to surface waters; • Off-site casting and preparation of concrete elements; • Pollution prevention measures to manage fuels, wet concrete and construction materials in proximity to watercourses; • Reinstatement of watercourse beds and banks following construction, with temporary sediment controls in place until disturbed areas have stabilised; • Haul road crossings will be temporary and removed following construction; and • Access track crossings will be designed in accordance with best practice to maintain flows and avoid conditions that could affect pH during operation.	During construction, there is potential for short-term, localised alkaline pH excursions associated with sediment mobilisation or the use of construction materials at watercourse crossings. With the implementation of embedded mitigation, these effects would be temporary and limited in extent. During operation, access track crossings will be designed to maintain channel stability and flows and will not introduce materials or conditions that could affect pH. The construction and operation of watercourse crossings will not result in deterioration of the pH supporting quality element and will not prevent the achievement of the relevant

				WFD objective for the affected surface waterbodies.
Nutrients (ammonia and phosphate) Ammonia and phosphate are physico-chemical supporting quality elements under the WFD. Potential effects on nutrient concentrations are limited to indirect, short-term changes associated with the mobilisation of sediment or organic material during construction activities; the Proposed Development does not introduce nutrients to surface waters.	**Cable Crossings** No direct impacts to the surface waterbodies as these cable crossings are all trenchless. There will be launch and reception pits needed for the trenchless crossings which will involve ground disturbance and use of heavy vehicles which can generate sediment and pollutants which can be mobilised and washed towards the surface waterbodies. The key source of impact would be if there is a “frac-out” of drilling fluid which would contaminate surface water.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	• Launch and reception pits will be set back 10m from all surface waterbodies reducing the risk of sediment and pollutants directly entering surface waterbodies; • Appropriate sediment and pollutant control measures in place at these areas enforced through the **oCEMP [EN0110020/APP/5.9]** and pollution prevention plan; • Launch and reception pits will only be in place temporarily during construction, not forming part of the permanent infrastructure of the Proposed Development; and • Cable installation will be undertaken in accordance with industry best practice and carefully managed; this will prevent the inadvertent release of drilling fluids into the surrounding surface water environment.	With the implementation of embedded mitigation, any effects on nutrient concentrations during construction would be limited to indirect, short-term and localised changes associated with sediment or organic material mobilisation. The Proposed Development does not introduce nutrients to surface waters, and no effects on nutrient concentrations are anticipated during operation. The installation of cables will not result in deterioration of the nutrients supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works directly within and on the banks of watercourses as well as disturbance of the watercourse bed. This will directly mobilise sediment into the channel, with additional sediment mobilisation coming from the use of heavy plant vehicles on the banks. Construction materials and heavy plant also increases the risk of accidental release of hydrocarbons or other construction related contaminants into the water column.	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• Suitable sediment and pollutant capture and control measures within the channel at crossing construction points to prevent excessive degradation in water quality; • Watercourse crossing installation will be carried out in the drier months where practicable as flows will be lower and the risk or pollution or sedimentation propagating downstream is reduced. The works would be completed in line with best practice ecological guidance to ensure no impact when dry working areas are required for in channel works; • Once the watercourses are reinstated, silt fences, geotextile matting, or straw bales will be used initially to capture mobilised sediments until the watercourse has returned to a settled state; • Pollution prevention plan in place to prevent spills and leaks of chemicals towards watercourses; any concrete pouring for the culverts will occur offsite; • The haul road crossings will be temporary and removed after the cable has been laid; and • The access track crossings will be permanent but the primary alkaline excursion risk will be during construction when there are greater sedimentation and pollutant risks. Once operational, the crossings are not anticipated to cause any nutrient loading impacts as the crossings will be designed inline with industry guidance such that there is no risk of scour and thus production of sediment containing nutrients.	With the implementation of embedded mitigation, any effects on nutrient concentrations during construction would be limited to indirect, short-term and localised changes associated with sediment or organic material mobilisation. The Proposed Development does not introduce nutrients to surface waters, and no effects on nutrient concentrations are anticipated during operation. The construction and operation of watercourse crossings will not result in deterioration of the nutrients supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.

Hydromorphological Quality Elements				
Quantity and Dynamics of Water Flow	**Cable Crossings** No direct impacts to the surface waterbodies as all cable crossings of WFD waterbodies are trenchless. Therefore, no direct impacts to in-channel water quantity or flow dynamics. The launch and reception pits will be set back 10m from all waterbodies.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	No mitigation required other than the design commitment to trenchless methodology as detailed in the **Outline Design Parameters [EN0110020/APP/7.3]**.	No effects on the quantity and dynamics of water flow are anticipated during construction or operation. The Proposed Development will not result in deterioration of this hydromorphological supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works directly within the watercourse channel. Temporary changes to water quantity or flow dynamics could occur where there is a need to create a temporary cofferdam or use overpumping to allow construction of the crossing. These effects would however be short term and localised during the construction phase. Haul road crossings are temporary and will be removed following cable installation. The access track crossings will be permanent. During operation improper design of watercourse crossings could affect water quantity or flow only if improperly designed. However, crossings will be designed to maintain conveyance and avoid throttling or scour.	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• During construction where a dry in channel works area is needed, a cofferdam will be installed to ensure it maintains downstream flow, and / or any pumps for over-pumping will be regularly maintained and checked to ensure downstream water quantity and flow dynamics are maintained; • An ECoW will oversee works to ensure there is maintenance of water quantity; and • For operation, all watercourse crossings will be designed in accordance with best practice with sufficient capacity to covey the 1 in 100 year plus climate change event and freeboard allowance. They will also be designed so as not to result in scour and thus changes in channel morphology which can alter flow dynamics.	There is potential for localised, short-term impacts to water quantity and flow dynamics during construction. With the implementation of the embedded mitigation downstream flow continuity will be maintained. During operation, watercourse crossings will be designed to maintain conveyance and channel stability and are not anticipated to affect water quantity or flow dynamics. As such, the construction and operation of watercourse crossings will not result in a deterioration of the quantity and dynamics of water flow supporting water quality element and will not prevent the achievement of the relevant WFD objective for the affected surface water bodies.
River Continuity Continuity of longitudinal water flow and sediment movement within the waterbody.	**Cable Crossings** will be undertaken using trenchless techniques beneath WFD surface waterbodies, with no in-channel works. As a result, there will be no interruption to longitudinal flow continuity or sediment transport within the channel. Temporary launch and reception pits will be located a minimum of 10m from surface	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740)	No mitigation required other than the design commitment to trenchless methodology.	No effects on river continuity are anticipated during construction or operation. The Proposed Development will not result in deterioration of the river continuity supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.

	waterbodies and will not interact with the channel.	Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)		
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works directly within the watercourse channel. Works to the banks and bed, and installation of the crossing itself, will alter the physical properties of the channel which in turn can alter water dynamics and sediment transport. Haul road crossings are temporary and will be removed following cable installation. Therefore impacts will be short term. The access track crossings will be permanent. During operation improper design of watercourse crossings can restrict flow, interfere with sediment transport pathways, negatively impact channel morphology, damage channel bedforms, and incur scour which leads to subsequent armouring of the channel bed and banks both upstream and downstream of the crossing location.	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• During construction, works to the bed and banks of the watercourse will be limited in length and area to those necessary to install the crossing; • Where there has been disturbance to the banks beyond the final crossing location, the banks will be restored so there is no long-term change in bank profile upstream and downstream of the crossing itself. It is also anticipated upgrades will need to be made to existing crossings. Any works will be within the footprint of the existing crossing and there will be a like-for-like crossing installed; and • For operation, all watercourse crossings will be designed in accordance with best practice such that the physical nature of the watercourse upstream and downstream of the crossing is not adversely impacted, for example scour, which can change in channel morphology and sediment transport.	There is potential for both short term and long term impacts to river continuity as a result of the introduction of watercourse crossings. However, the mitigation set out will prevent long term Significant impacts to river continuity during both construction and operation. As such, the installation of watercourse crossings will not result in a derogation in this WFD parameter.
River Depth and Width Variation	**Cable Crossings** No direct impacts to the WFD surface waterbodies as all cable crossings are trenchless. Therefore no direct impacts to the river width or depth. The launch and reception pits will be set back 10m from all waterbodies.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	No mitigation required other than the design commitment to trenchless methodology.	No anticipated impact therefore no deterioration in this WFD parameter.
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works directly within the watercourse	Anston Brook from Source to River Ryton (GB104028058210)	• During construction, works to the bed and banks of the watercourse will be limited in length and area to those necessary to install the crossing. Where disturbance to the banks beyond the final crossing location, the banks will be restored so there is no long term change river width upstream and	During construction, there is potential for short-term, localised changes to river width and depth associated with in-channel works. With

	channel and may result in river width and depth changes. Haul road crossings are temporary and will be removed following cable installation. Therefore any effects will be short term. The access track crossings will be permanent. During operation improper design of watercourse crossings could affect channel morphology through constriction or localised erosion and therefore changes to channel width and depth.	Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	downstream of the crossing itself. It is also anticipated upgrades will need to be made to existing crossings. Any works will be within the footprint of the existing crossing and there will be a like-for-like crossing installed; and • For operation, all watercourse crossings will be designed in accordance with best practice such that the crossing does not become a constriction in the channel, or alter the flow dynamics such that it would cause knock on width and depth changes.	the implementation of embedded mitigation, these effects would be temporary and confined to the immediate crossing location. During operation, crossings will be designed to maintain channel form and stability, and no effects on river width and depth are anticipated. The construction and operation of watercourse crossings will not result in deterioration of the river width and depth variation (morphological condition) supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
Structure and Substrate of the Riverbed	**Cable Crossings** Cable crossings will be undertaken using trenchless techniques beneath WFD surface waterbodies, with no in-channel works. As a result, there will be no direct disturbance to the riverbed or substrate during construction. The cables will be installed approximately 1.5m below the riverbed. The temporary launch and reception pits will be set back 10m from all waterbodies and will not interact with the channel	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	No mitigation required other than the design commitment to trenchless methodology.	No effects on the structure or substrate of the riverbed are anticipated during construction or operation. The Proposed Development will not result in deterioration of the structure and substrate of the riverbed supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
	Watercourse Crossings for Access Tracks and Haul Roads Installation of new watercourse crossings will involve works within the channel that may result in localised, temporary disturbance to the structure and substrate of the riverbed during construction, for example through bed excavation or sediment mobilisation associated with foundation installation During operation changes to riverbed structure and substrate could occur only where crossings are poorly designed; however, the design of crossings will seek to	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• Once the temporary crossings have been removed and or the crossings installed, silt fences, geotextile matting, or straw bales will be used initially to capture mobilised sediments until the watercourse has returned to a settled state; • All watercourse crossings will be designed in accordance with best practice with sufficient capacity to maintain natural sediment transport processes and minimise disturbance to riverbed structure and substrate, thereby preventing scour and inappropriate deposition; and • In circumstances where culverts must be used for upgrades to existing crossings, these will be three-sided culverts which preserve the natural bed of the	During construction, there is potential for localised, short-term effects on the structure and substrate of the riverbed associated with in-channel works. However, with embedded mitigation in place these effects would be temporary and confined to the crossing location. During operation, watercourse crossings will be designed to maintain natural bed conditions and sediment

	maintain natural bed conditions and sediment processes. Haul road crossings are temporary and will be removed following cable installation. Therefore effects associated with these will be short term. The access track crossings will be permanent and will be designed to maintain natural bed conditions and sediment processes, and have no effects on riverbed structure or substrate.		watercourse and enables normal conveyance of water and sediment.	processes, and no effects on riverbed structure or substrate are anticipated. The construction and operation of watercourse crossings will not result in deterioration of the structure and substrate of the riverbed supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies.
Structure of the Riparian Zone	**Cable Crossings** No direct impacts to the surface waterbodies as all cable crossings are trenchless. Therefore no direct interaction with the riparian zone. The launch and reception pits will be set back 10m from all waterbodies considered outside the riparian zone.	Anston Brook from Source to River Ryton (GB104028058210) Ulley Brook from Source to River Rother (GB104027057740) Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162) Chesterfield Canal, upper section (GB70410526)	No mitigation required other than the design commitment to trenchless methodology.	No effects on the structure of the riparian zone are anticipated during construction or operation. The Proposed Development will not result in deterioration of the riparian zone structure supporting quality element and will not prevent the achievement of the relevant WFD objective for the affected surface waterbodies
	Watercourse Crossings for Access Tracks and Haul Roads Construction of new watercourse crossings and the upgrade of existing crossings will require works within the riparian zone to allow for access and for example any bridge supports that need installed. Works in the riparian zone may result in localised disturbance including the removal of vegetation, sediment generation, and an increased risk of ollutant mobilisation. Haul road crossings are temporary and will be removed following cable installation meaning short term effects during construction. The access track crossings will be permanent but will be designed to avoid effects where practicable.	Anston Brook from Source to River Ryton (GB104028058210) Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161)	• During construction, works within the riparian zone will be limited in area to those necessary to install the crossing. Where there has been disturbance to the riparian zone and there is no permanent infrastructure required, the riparian vegetation will be reinstated to restore riparian structure and function including its role as natural sediment and pollutant buffer; and • Where upgrades are needed to existing crossings, works will be within the footprint of the existing crossing and thus riparian zone.	There is potential for both localised temporary, short term impacts to the riparian zone. However, the mitigation set out will prevent long term Significant impacts during construction and operation. During operation, watercourse crossings will be designed to maintain riparian zone, and no effects on riverbed structure or substrate are anticipated. As such, the installation of watercourse crossings will not result in a deterioration in this WFD parameter.

Table 10.2.7 Impact Assessment - Screening in Groundwater Bodies

WFD Quality Element	Source of Impact	Screened In / Impacted Waterbody	Mitigation	Compliance Assessment
Chemical Status Elements				
Chemical Drinking Water Protected Area	Trenchless crossings. Piling for foundations of substations.	Don and Rother Millstone Grit & Coal Measures Idle Torn Magnesian Limestone	No mitigation required other than the design commitment to trenchless methodology. The CEMP and best practise will be followed during all aspects of construction to ensure no impact to groundwater body.	No drinking water safeguard zones within the Study Area. A groundwater source protection zone 3 (SPZ) is present on the south eastern side of the Study Area, with a very small segment of the Cable Corridor at South Aston located within the SPZ. The oCEMP and best practise will ensure that there will be no deterioration in this WFD parameter.
General Chemical Test	Trenchless crossings. Piling for foundations of substations.	Don and Rother Millstone Grit & Coal Measures Idle Torn Magnesian Limestone	The CEMP and best practise will be followed during all aspects of construction to ensure no impact to groundwater body. The appropriate piling technique will be selected to ensure no preferential pathway is created.	No deterioration in this WFD parameter.

Chemical GWDTEs Test	N/A	N/A	No mitigation required.	No GWDTEs are known to be present in the Study Area. Therefore no deterioration in this WFD parameter
Chemical Dependent Surface Water Body Status	Trenchless crossings. Piling for foundations of substations.	Don and Rother Millstone Grit & Coal Measures Idle Torn Magnesian Limestone	The CEMP and best practise will be followed during all aspects of construction to ensure no impact to groundwater which could then impact surface water body status.	No impact to chemical dependent surface water body status. Therefore no deterioration in this WFD parameter.
Chemical Saline Intrusion	N/A	N/A	No mitigation required.	No saline waterbodies known in the vicinity of the Study Area. Therefore no deterioration in this WFD parameter.

Assessment of the Proposed Development Against WFD Objectives

10.3.78 In addition to the WFD quality-element assessment, the Proposed Development has been appraised against the environmental objectives and programme of measures set out in the relevant RBMP (Humber RBMP), consistent with the requirement for decision-makers to consider effects on RBMP objectives and measures for Nationally Significant Infrastructure Projects. This appraisal is a proportionate, desk-based review undertaken to identify whether the Proposed Development could reasonably be expected to interact with, constrain, or impede delivery of RBMP measures within the Humber River Basin District, with a focus on the Don and Rother and Idle and Torne management catchments.

10.3.79 Measures and catchment partnership actions were identified from the EA Catchment Data Explorer and associated catchment partnership pages and screened for relevance to the types of pressures that could plausibly be influenced by the Proposed Development (e.g. physical modification at crossing locations, sediment mobilisation and pollution risk during construction, and maintenance of conveyance and channel stability during operation). Each relevant measure/action was then qualitatively appraised as either: (i) no interaction / not relevant (no pathway), (ii) no adverse interaction (neutral), or (iii) potential to support delivery (where a relevant, secured design feature or commitment would contribute).

10.3.80 The appraisal relies on the embedded mitigation described in **ES Volume 2, Chapter 6: Biodiversity and Nature Conservation [EN0110020/APP/6.6]**, **ES Volume 2, Chapter 10: Water Resources and Flood Risk [EN0110020/APP/6.10]** and the outcomes of the WFD quality-element assessment (Tables 6 and 7) to demonstrate that the Proposed Development will not cause deterioration or prevent achievement of WFD objectives; it does not represent a commitment by the Applicant to deliver RBMP or catchment partnership measures beyond those secured within the Proposed Development.

10.3.81 To ensure a transparent and WFD-aligned assessment, the Proposed Development has been appraised directly against the relevant RBMP measures published via the EA's Catchment Data Explorer, including the summary programmes of measures for the Humber RBD and associated catchment specific actions from catchment partners (catchment partnership)[9] (see **Table 10.2.8** and **Table 10.2.9** respectively, below). Catchment partnership actions typically reflect locally determined, delivery-focused and often community-led measures intended to address waterbody pressures at a catchment scale. Appraising the Proposed Development against both RBMP measures and associated catchment partner actions provides a clear line of sight between statutory objectives and local implementation, consistent with the requirements of Regulation 33 of the WFD and enables consideration of whether the Proposed Development would impede or constrain the delivery of statutory RBMP measures and locally delivered community-led actions.

Table 10.2.8 Appraisal of the Proposed Development Against the Delivery of Applicable Humber River Basin Management Plan Measures

Lead Organisation	Measure Summary	Management Catchment	Appraisal of the Proposed Development
Nottinghamshire Wildlife Trust	A Site of Special Scientific Interest (SSSI) restoration project looking to take evidence led, catchment based approach to effectively identify and solve water resource and flooding issues contributing to river basin management plan failures.	Idle and Torne	The Proposed Development will not interact directly with WFD designated surface waterbodies aside from limited culvert and / or bridge works, which will be undertaken in accordance with the CEMP. These works will incorporate sediment, erosion and pollution prevention-measures and will be designed to accommodate future flood flows and maintain baseline hydrological conveyance as detailed in **Table 10.2.6**. This will ensure no adverse effects on watercourses, flood risk or local water resources. There is potential for improvement to the baseline conditions with the upgrades of existing watercourse crossings. An **oCEMP [EN0110020/APP/5.9]** has been submitted alongside this Application. There is no adverse interaction between the Proposed Development and this measure. As such, the Proposed Development will not impede delivery of this measure (SSSI restoration) and interactions with WFD waterbodies are limited to a small number of crossing works and are controlled through embedded mitigation and design commitments (including pollution prevention, sediment control, and reinstatement), such that no deterioration or constraint to future restoration activity is anticipated.
EA / Sheffield City Region	Catchment wide programme of Nature Based Solutions achieving a range of measures from the moors of the Peak District to the	Don and Rother	All works will be undertaken in accordance with the **oCEMP [EN0110020/APP/5.9]**, which includes measures to prevent sedimentation, pollution, and degradation of watercourse habitats and the wider

	lowlands of the Humber to reduce flood risk, create/improve habitats and improve water quality.		environment. Cable installation and watercourse crossing works will incorporate appropriate sediment controls and best-practice pollution prevention measures to ensure that construction activities are controlled and do not adversely affect watercourse condition or impede the delivery of habitat enhancement, creation, or wider catchment restoration actions. As detailed in **Table 10.2.6**, culvert works will be designed to accommodate future flood flows and maintain baseline hydrology and sediment conveyance. The Proposed Development would therefore not adversely affect flood routing or conveyance and would not constrain future flood risk management measures. As such, no adverse effect on flood risk is anticipated. There is no adverse interaction between the Proposed Development and this measure. As such, the Proposed Development would not impede or constrain the delivery of the nature-based solutions measures identified. Construction impacts would be appropriately controlled through embedded mitigation, and the drainage strategy has been designed to ensure there is no deterioration of WFD quality elements. As such, the Proposed Development would not prevent future catchment restoration or nature-based solutions delivery within the management catchment.
Don Catchment Rivers Trust, EA, City of Doncaster Council	Measures improving and addressing physical modification, riparian habitats, reducing diffuse pollution and reducing flood risk	Don and Rother	There will be some unavoidable, short - term and very localised disturbance to watercourses during the construction phase, particularly where culverts are constructed or modified for Site access and where cables are installed using launch and reception pits

			within riparian areas. These activities may result in temporary localised disruption to bankside vegetation, minor alterations to channel form and short - duration increases in sediment mobilisation; however, such effects will be limited in extent and duration. All works will be undertaken in accordance with the **oCEMP [EN0110020/APP/5.9]**, which sets out the specific measures to be implemented during watercourse crossing, cable installation activities, sedimentation and erosion and pollution measures. As detailed in **Table 10.2.6**, culvert works will be designed to accommodate future flood flows and maintain baseline hydrological and sediment conveyance, as such, no adverse effects on flood risk is anticipated. The oSWDS will be followed which will ensure no negative effects on nutrient pathways, as existing drainage will be mimicked. The change in land use from arable land within the Order Limits may reduce water quality risk to watercourses with diffuse agricultural chemicals and soil erosion, however, this is treated as potential secondary benefit rather than a relied-upon mitigation. As a result, there is no adverse interaction between the Proposed Development and this measure and thus will not impede delivery of this measure. Any interaction with watercourses is limited to short-term, localised construction activity at crossings and trenchless works, and is managed through embedded mitigation to avoid

			deterioration of WFD quality elements. Crossings are designed to maintain conveyance and channel stability and therefore do not constrain future actions to address physical modification, riparian habitat improvements, or diffuse pollution reduction within the catchment.

Table 10.2.9 Appraisal of the Proposed Development Against the Delivery of Applicable Humber River Basin Management Plan Catchment Partnership Actions / Measures

Catchment Partner (Host)	Priority Action / Measure 2022 - 2027	Reason for Measure	Location	Appraisal of the Proposed Development
Don Catchment Rivers Trust	Enhancement / no deterioration measures in 2020 - 2025 Water Industry National Environment Programme	Control or manage point source discharges	Don and Rother Management Catchment	Activities associated with the Proposed Development would not interact with this action. The measure relates to the control and management of point-source discharges within the Don and Rother Management Catchment and the Proposed Development does not involve point-source discharges or activities that would influence their operation. As such, there is no pathway by which the Proposed Development could impede or constrain delivery of this measure.
Don Catchment Rivers Trust	Rotherham Rivers 3 - mitigating impacts of physical modification in lower Rother heavily modified for flood protection	Mitigate the impacts on ecology from physical modifications in modified waters	Rother, Doe Lea to Don (GB104027057772)	Activities associated with the Proposed Development have the potential to interact with this action due to their location within the wider River Rother catchment. Short-term, localised construction effects may be observed within the Rother tributary Ulley Brook; however, these effects would be controlled through embedded mitigation and would be spatially limited, occurring approximately 650m upstream of the River Rother. The Proposed Development would not adversely affect the hydromorphology or ecological function of the River Rother and would not impede or constrain delivery of measures aimed at mitigating the impacts of physical modification in heavily modified waters.

Don Catchment Rivers Trust	Source to Sea - catchment wide nature based solutions to reduce flood risk, diffuse pollution and improve habitats	Control or manage rural diffuse pollution	Don and Rother Management Catchment	The Proposed Development has the potential to support delivery of this measure. The change in land use from arable use to solar development within the Order Limits has the potential to reduce rural diffuse pollution pressures, including inputs of nutrients, agricultural chemicals and sediments associated with soil erosion. As such, the Proposed Development could aid the objectives of catchment-wide nature-based solutions aimed at managing diffuse pollution and improving water quality, without constraining wider delivery of these measures across the Don and Rother Management Catchment.
Don Catchment Rivers Trust	Friends of the Don Valley way; a regular litter picking and river clean up volunteer group	Removing plastics / litter from the water environment	Don Middle Operational Catchment (Including Kearsley Brook (GB104027064244))	This action relates to community-led litter picking and removal of plastics from the water environment. Activities associated with the Proposed Development would not interact with this action and there is no pathway by which the Proposed Development could influence or affect its delivery. As such, the Proposed Development would not impede or constrain delivery of this measure.
Nottinghamshire Wildlife Trust	Nature Recovery Networks in Farmed Landscapes; increasing biodiversity and community involvement	Control or manage of rural diffuse pollution	Idle River Operational Catchment (Including Anston Brook from Source to River Ryton (GB104028058210), Broad Bridge Dyke Catchment (trib of	The Proposed Development has the potential to support delivery of this measure. The change in land use from agricultural use to solar development within the Order Limits has the potential to reduce rural diffuse pollution pressures, including inputs of nutrients, agricultural chemicals and sediments associated with soil erosion. As such, the Proposed Development could aid

			Chesterfield Canal) (GB104028058161) and River Ryton from Chesterfield Canal to Anston Brook (GB104028058162))	the objectives of catchment-wide nature recovery without constraining wider delivery of these measures across the Idle River Operational Catchment.

Summary of Compliance

10.3.82 The compliance of the Proposed Development with the objectives of the WFD has been assessed through consideration of:

- (i) potential effects on WFD quality elements for surface water and groundwater bodies; and
- (ii) whether the Proposed Development would impede the achievement of wider river basin objectives and measures set out in the Humber RBMP.

10.3.83 The compliance of the Proposed Development with WFD objectives is determined based on an assessment against the following objectives relating to WFD quality elements:

- Whether the Proposed Development will cause deterioration in the ecological potential or status of a water body;
- Whether the Proposed Development will compromise the ability of a waterbody to achieve good ecological status or potential;
- Whether the Proposed Development will cause a permanent exclusion or compromise achievement of the WFD objectives (e.g. mitigation measures) in other waterbodies within the same RBD; and
- Whether the Proposed Development will contribute to the delivery of the WFD objectives (e.g. mitigation measures).

10.3.84 The outcome of the WFD compliance assessment for the Proposed Development is summarised in **Table 10.2.10**, which demonstrates that the Proposed Development is compliant with the objectives of the WFD.

Table 10.2.10 Compliance Assessment of the Proposed Development

Compliance Elements	Surface Waterbody Assessment	Groundwater Body Assessment
Deterioration in the ecological potential or status of a surface waterbody	The Proposed Development will not result in deterioration of ecological status or potential, as assessed against the physico-chemical, biological and hydromorphological WFD quality elements. This conclusion is based on the identification of credible impact pathways and the implementation of embedded mitigation measures secured through the Proposed Development design and **oCEMP [EN0110020/APP/5.9]**.	N/A
Deterioration of the chemical or quantitative potential or	N/A	The Proposed Development is not anticipated to cause a deterioration of the chemical

status of a groundwater body.		or quantitative potential or status of a groundwater body as assessed against the individual groundwater elements. This is based on the embedded mitigation and **oCEMP [EN0110020/APP/5.9]** that that will prevent deterioration of the chemical or quantitative potential or status on a groundwater body scale.
Ability of a waterbody to achieve good ecological status or potential	The Proposed Development will not prevent the achievement of Good Ecological Status or Potential as it would not adversely affect the WFD quality elements supporting ecological status. Embedded mitigation secured through the Proposed Development design and **oCEMP [EN0110020/APP/5.9]** ensures that the Proposed Development would not constrain current or future recovery trajectories for affected surface waterbodies.	N/A
Ability of a groundwater body to achieve good chemical or quantitative status or potential	N/A	The embedded mitigation and **oCEMP [EN0110020/APP/5.9]** will prevent the Proposed Development from preventing the groundwater body to achieve good chemical or quantitative status or potential.
Impact on the WFD objectives of other water bodies within the same RBD	The Proposed Development will not result in upstream or downstream effects that could affect the achievement of WFD objectives for other waterbodies within the Humber RBD. The assessment demonstrates	No wider impacts are anticipated associated with the Proposed Development with implementation of the embedded mitigation and **oCEMP [EN0110020/APP/5.9]**.

	that the Proposed Development would not constrain the delivery of statutory RBMP measures or associated catchment partner actions at a wider catchment scale, consistent with Regulation 33 of the WFD Regulations.	
Ability to contribute to the delivery of the WFD objectives	The Proposed Development is not required to deliver WFD or RBMP measures; however, it will not impede the delivery of WFD objectives. The assessment demonstrates that the Proposed Development will not cause deterioration, will not prevent the achievement of WFD objectives and will not constrain the implementation of RBMP measures within the Humber RBD. Any localised environmental enhancements are treated as secondary benefits and are not relied upon to demonstrate compliance with the WFD.	The Proposed Development is not required to deliver WFD or RBMP measures; however, it will not impede the delivery of WFD objectives. The assessment demonstrates that the Proposed Development will not cause deterioration, will not prevent the achievement of WFD objectives and will not constrain the implementation of RBMP measures within the Humber RBD. Any localised environmental enhancements are treated as secondary benefits and are not relied upon to demonstrate compliance with the WFD.

Conclusion

10.3.85 This Appendix has assessed the potential for the Proposed Development to result in effects to WFD designated surface water and groundwater bodies and if the Proposed Development will comply with WFD objectives.

10.3.86 The assessment has followed a three step screening, scoping and impact assessment process.

10.3.87 The Proposed Development is located within the Don and Rother Management Catchment and the Idle and Torne Management Catchment of the Humber RBD. Within these catchments the Proposed Development directly interacts with five WFD surface waterbodies which have been screened into assessment:

- Anston Brook from Source to River Ryton (GB104028058210);
- Ulley Brook from Source to River Rother (GB104027057740);
- Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (GB104028058161);

- Ryton from Chesterfield Canal to Anston Brook Water Body (GB104028058162); and
- Chesterfield Canal, upper section (GB70410526).

10.3.88 The Proposed Development is underlain by two groundwater bodies which have also been screened into assessment:

- Don & Rother Millstone grit & Coal Measures (GB40402G992300); and
- Idle Torne – Magnesian Limestone (GB40401G300600).

10.3.89 The activities screened into assessment and which have the potential to effect WFD waterbodies are:

- Activities associated with the installation of underground cables beneath surface waterbodies which could impact surface and groundwater bodies;
- Activities associated with construction and operation of watercourse crossings for access tracks and haul roads which could impact surface waterbodies; and
- Activities associated with the construction of substations which could have foundation depths of up to 15m BGL which could impact groundwater bodies.

10.3.90 This assessment concludes that the components / activities associated with the Proposed Development will not result in deterioration of any WFD quality elements (ecological or chemical) for either the WFD surface water or groundwater bodies.

10.3.91 The Proposed Development will also not prevent the achievement of the WFD objectives or constrain the delivery of relevant measures set out in the Humber RBMP.

References

[1] Environment Agency (2024) *Humber river basin district river management plan: updated 2022* [online]. Available at: Humber river basin district river management plan: updated 2022 - GOV.UK [Accessed May 2026].

[2] Planning Inspectorate (2025) Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive [online]. Available at: Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive - GOV.UK [Accessed May 2026].

[3] European Union Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

[4] UK Government (2017) *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017* [online]. Available at: The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 [Accessed May 2026].

[5] UK Government (2016) *The Environmental Permitting (England and Wales) Regulations 2016* [online]. Available at: The Environmental Permitting (England and Wales) Regulations 2016 [Accessed May 2026].

[6] Environment Agency (2016) *Water Framework Directive Risk Assessment – How to assess the risk of your activity* [online]. Available at: Water Framework Directive risk assessment [Accessed May 2026].

[7] Environment Agency (2016) *Environmental Quality Standards Directive (EQSD) list for WFD assessments* [online]. Available at: Environmental Quality Standards Directive (EQSD) list for WFD assessments - GOV.UK [Accessed May 2026].

[8] Environment Agency (2026) *Catchment Data Explorer* [online]. Available at: England | Catchment Data Explorer [Accessed May 2026].

[9] Environment Agency (2026) *Catchment Data Explorer – Catchment Partnership Pages* [online]. Available at: Catchment Partnership Pages | Catchment Data Explorer [Accessed April 2026].

E., James. Ghodsi., M. Ford,. A. (2026). Electromagnetic Fields from Submarine Power Cables: A 35 Year Synthesis of Effects on Aquatic Biota. (Online). Available at: https://researchportal.port.ac.uk/en/publications/electromagnetic-fields-from-submarine-power-cables-a-35-year-synt/#:~:text=EMFs%20from%20SPCs%20can%20elicit,of%20offshore%20renewable%20energy%20infrastructure. [Accessed April 2026].

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