



**East Pye Solar
Environmental Statement
Volume 3: Appendix 9.2 - Water Framework Directive
Assessment**

Revision 24 (Tracked)

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Schedule of Changes

Reference	Page	Description of Changes	Reason for Revision
Environmental Statement Volume 3, Appendix 9.2 – Water Framework Directive Assessment Revision 2	1	Clarification of zones impacted by the CRC and generating stations	Response to Relevant Representation RJ-PDA-008 and EA-036
	4 and 6	Confirmation of where the private water supply information is located in the supporting documents and if it is relevant to the WFD	Response to Relevant Representation BEPS-PDA-023
	6-10	Clarification that all relevant water bodies have been included, and that we are aware of and assessed the chalk nature of the streams and catchments	Response to Relevant Representation RJ-PDA-008
	11	Inclusion of piling impacts and confirmation all sensitive receptors (all water supplies) were included within the assessment and supporting documents	Updated to include the new construction information and Response to Relevant Representation BEPS-PDA-023 and EA-036
	13	Confirmation the DEFRA water quality explorer was also used for the assessments	Response to Relevant Representation EA-011
	24-25	Piling impacts added in for the groundwater potential impacts	Updated to include the new construction information and Response to Relevant Representation BEPS-PDA-023 and EA-036

1 Introduction

1.1 Background

1.1.1 A Water Framework Directive (WFD) Assessment has been prepared to accompany **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]** for the proposed East Pye Solar project (the Scheme), located south of Norwich and north of Harleston (the Order Limits).

~~1.1.1~~ The Scheme comprises the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating station with a total capacity exceeding 100 megawatts (MW) and associated development including a Battery Energy Storage System (BESS), up to three 132 kV and up to three 400kV Project Substations, Grid Connection Infrastructure and a new National Grid Substation. Solar PV electricity generating stations are located at Sites 1, 2, 3, 4, 5, 7, 8, 9 and 10 of the Scheme. Cable Route Corridors (CRC) 1-14 are areas in which export connection cables would be located to connect the Sites to the new National Grid Substation. A complete description of the Scheme can be found in **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**.

1.1.2 A number of watercourses including the River Tas, Hempnall Beck, Broome Beck and Pulham Beck, and associated tributaries, are located in proximity to the Order Limits.

1.1.3 This WFD Assessment sets out the potential impacts that the Scheme, including embedded mitigation, could have on the watercourses' ability to meet the WFD requirements.

1.2 Water Framework Directive

1.2.1 The WFD was transposed into law in England and Wales by the Water Environment Regulations 2003. This was amended in 2017 to the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref 1-1) and was updated in 2019 (Ref 1-2). The Regulations implement a holistic approach to the management, protection and monitoring of the water environment. The aim of the Regulations is to prevent further deterioration in water resources (volume and quality); protect and enhance the status of aquatic ecosystems and associated wetlands; promote sustainable water consumption; and contribute to mitigating the effects of floods and droughts.

1.2.2 The key objectives of the WFD are to prevent deterioration in the status of waterbodies and aim to achieve good ecological and chemical status (including quantitative status in groundwater bodies) by 2027. Waterbodies must also comply with standards and objectives of Protected Areas i.e. an area designated under another European Directive, such as a Special Area of Conservation (SAC) or Special Protection Area (SPA), where these apply.

- 1.2.3 In addition, discharges, emissions and losses of priority substances to surface waterbodies must be progressively reduced and emissions of priority hazardous substances prevented. Action must also be taken to reverse any identified sustained upward trend in pollution concentrations in groundwater bodies.
- 1.2.4 The Anglian River Basin Management Plan (RBMP) 2022 (Ref 1-3) is the applicable management plan for the Scheme and has been used to assess the potential impacts of the Scheme.

1.3 Methodology

- 1.3.1 The Environment Agency (EA) recommends a three-stage methodology for WFD assessments, demonstrated in **Figure 1.1**, relating to the Screening, Scoping and Impact assessments, respectively. This includes six key points which have been detailed throughout the following Sections of this WFD Assessment.

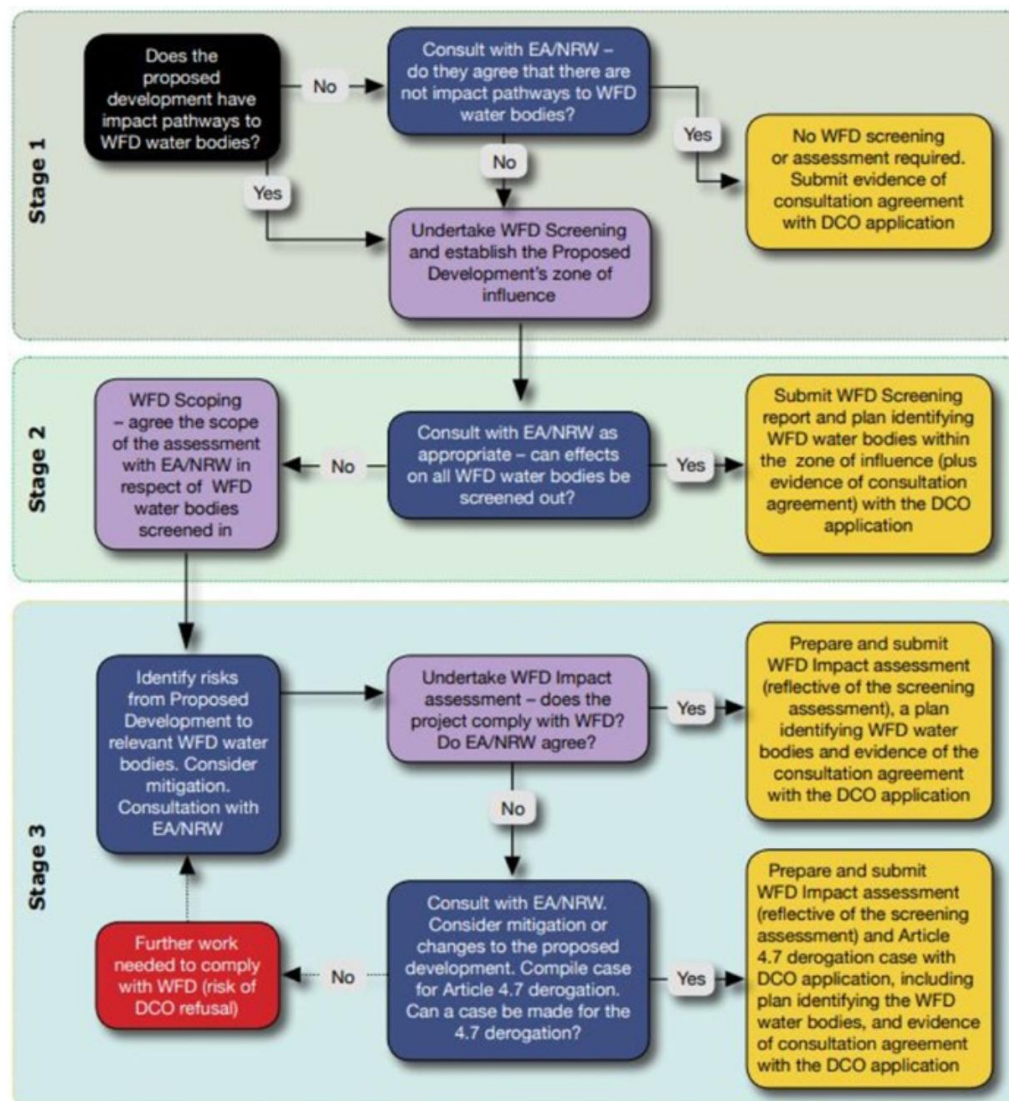


Figure 1.1: EA Recommended Assessment Process (2024) (Ref 1-4)

1.3.2 The EA has also provided the following guidance that has been considered in the WFD Assessment:

- Identification of potential generic operational impacts on hydromorphological quality elements;
- Site specific assessment against biological, physico-chemical and hydromorphological quality elements;
- Assessment against WFD mitigation measures;
- Cumulative impact in conjunction with other proposed developments planned or in place on the water body;
- Assessment against WFD status objectives; and
- Assessment against other legislation (Protected Areas).

1.4 Supporting Reports

1.4.1 Other parts of the Environmental Statement relevant to this assessment are as follows:

- **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]** describes hydrology relevant to the Order Limits.
- **ES: Appendix 8.1 Ecological Desk Study and Extended Habitat Survey [EN0110014/APP/6.3.8.1]** provides detail about habitats and species relevant to the Scheme.
- **ES: Appendix 9.1 Flood Risk Assessment & Outline Surface Water Drainage Strategy [EN0110014/APP/6.3.9.1]** supports the hydrological elements assessed in this WFD.
- **ES: Appendix 16.1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]** presents information in relation to the geology and hydrogeology at the Order Limits based on the BGS geology maps and historical borehole records. [This document also considers private water supplies.](#)

2 Scheme Overview

2.1 Scheme Description and Location

- 2.1.1 A description of the Scheme is provided in the **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]** and the Order Limits are shown in **Figure 2.1** below.

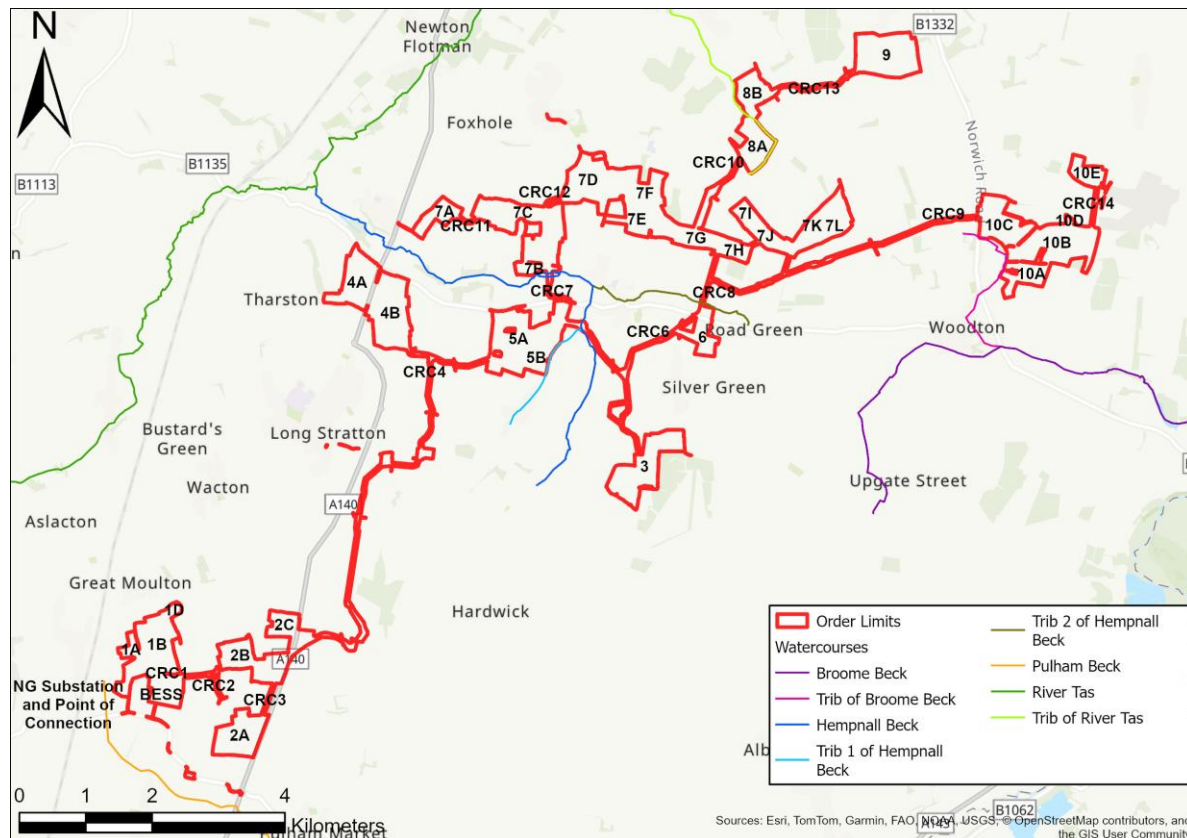


Figure 2.1: Order Limits Location

2.2 Geology and Groundwater

- 2.2.1 The Phase 1 Ground Conditions Assessment in **ES: Appendix 16.1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]** presents information in relation to the geology and hydrogeology at the Order Limits based on the BGS geology maps and historical borehole records.
- 2.2.2 The south-western areas of the Order Limits (BESS, National Grid Substation Site, Site 1 and Site 2), part of Sub-Sites 10A-10D, the southern half of CRC4 and parts of CRC8 and CRC9 are located within a Drinking Water Safeguard Zone for surface water for nitrate, clopyralid, metaldehyde and propyzamide (pesticides). These Substances are related to farming use and are therefore not relevant to the proposed uses of the Scheme. The

Order Limits are not located within any Drinking Water Safeguard Zones for groundwater.

- 2.2.3 The south-western areas (Sub-Site 2A, CRC2 and CRC3), southern and central areas (northern part of Site 3, Sub-Sites 7D-7L and CRC 6, 8, 10, 12 and 13) and eastern areas (Sub-Sites 10A-10D and CRC 9 and 14) of the Order Limits are located within a Zone III (Total Catchment) Groundwater Source Protection Zone (SPZ), meaning that activities ~~within~~ the Order Limits can pose a risk of pollution of groundwater sources used for drinking water. There are no recorded private water supplies abstracted within the Order Limits. Information relating to private water supplies is provided in Section 3.4 of ES Volume 3, Appendix 16.1 - Ground Conditions Assessment [EN0110014/APP/6.3.16.1].
- 2.2.4 Peat is present beneath CRC7, which is classified as 'Unproductive' strata.
- 2.2.5 Cranfield Soilscales' online viewer (Ref 1-5) indicates that the soil across the Order Limits is a combination of slowly permeable, seasonally wet, slightly acidic but base-rich, loamy and clayey soils; slightly acidic, loamy and clayey soils with impeded drainage; and loamy and sandy soils with naturally high groundwater and a peaty surface.
- 2.2.6 Sensitive water receptors (private drinking water supplies) and designated sites (SAC, Sites of Specific Scientific Interest (SSSI) and Broadland Ramsar) are located within the Study Area (as defined in **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]**). The River Tas and Hemphall Beck are classified by Natural England (Ref 1-6) as Chalk Streams. There is a potential for these receptors to be impacted by the Scheme through the mobilisation of contaminants to surface water and groundwater receptors. Therefore, a mitigation strategy has been developed to address such risks during all phases of the Scheme.
- 2.2.7 Seven WFD water body catchments lie within the Order Limits; six of which are surface water and one is groundwater.

2.3 Groundwater WFD Water Body – Broadland Rivers Chalk & Crag

- 2.3.1 The WFD groundwater water body beneath the Order Limits is the Broadland Rivers Chalk & Crag Water Body (GB40501G400300) which underlies the entire Order Limits.
- 2.3.2 According to the DEFRA 'Magic Map' online viewer (Ref 1-7), the underlying bedrock strata is classified as a 'Principal' Aquifer, whilst the superficial drift strata is 'Secondary A' and 'Secondary (undifferentiated)'. These are classified by the EA as:
- Principal aquifers are characterised as providing significant quantities of water that can support water supply and/or baseflow to rivers, lakes and

wetlands on a strategic scale. They are usually characterised as having a high intergranular and/or fracture permeability and therefore they usually provide significant water storage.

- Secondary A aquifers are characterised as permeable layers capable of supporting water supplies at a local than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
- Secondary (undifferentiated) aquifers are where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value.

2.4 Surface Water WFD Water Bodies

2.4.1 **Figure 2.2** shows the location of the six WFD surface water body catchment boundaries in relation to the Order Limits. Within the catchment boundaries there are also un-named tributaries and field drains which are noted below.

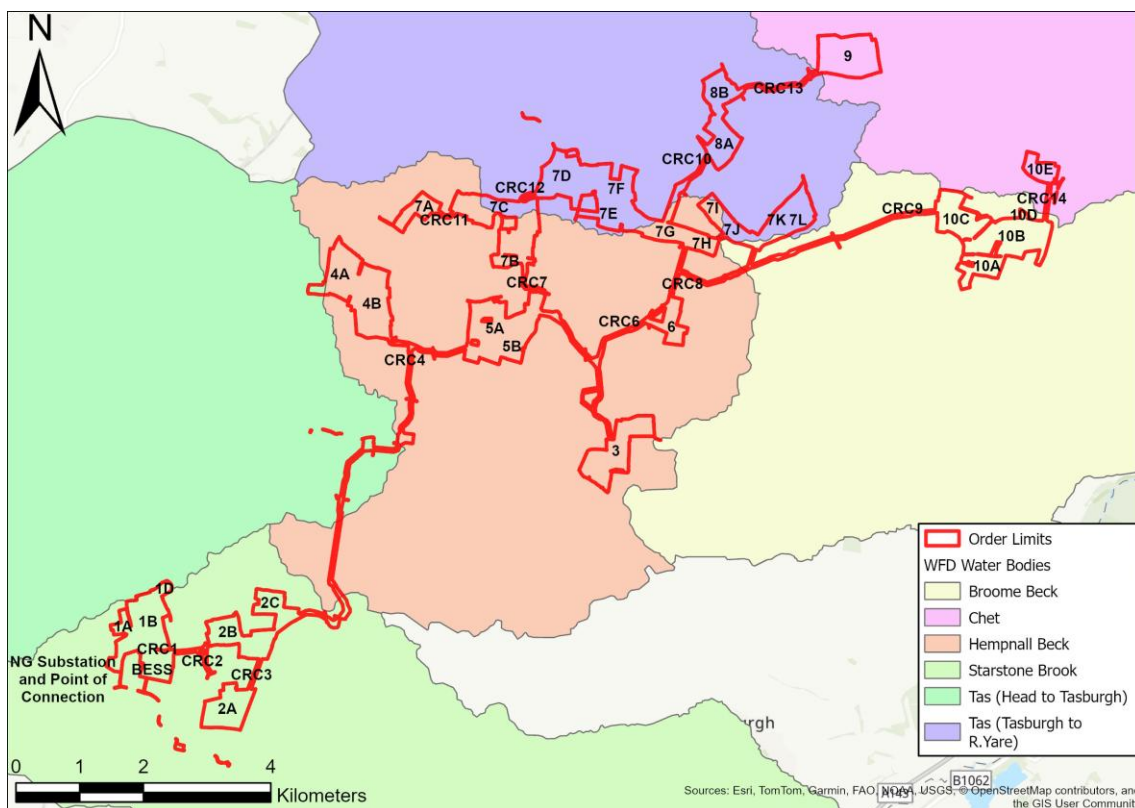


Figure 2.2: Location of WFD catchment areas

River Tas

2.4.2 The River Tas is an EA designated Main River and is classified as a Chalk Stream. It and is sub-divided into two WFD water bodies – the River Tas

(Head to Tasburgh) water body (GB105034045730) located upstream of Tasburgh, and the River Tas (Tasburgh to River Yare) water body (GB105034051230) which is downstream of Tasburgh. The River Tas is located to the north of the Order Limits and flows in a north-easterly direction towards Norwich.

- 2.4.3 ~~There is no direct interaction between the~~ Order Limits ~~are not located directly adjacent to and~~ the River Tas, with the closest parts of the Order Limits being Sub-Sites 4A and 7A, both located approximately 1.1km from the River Tas at their closest point. ~~There is no direct interaction between the Order Limits and the River Tas. Part of CRC 4 and a small part of Sub-Site 4A lie within the catchment of the River Tas (Head to Tasburgh) water body. Sub-Sites 7C to 7F, 8A and 8B, CRC 13 and part of CRC 10 lie within the catchment of the River Tas (Tasburgh to River Yare) water body.~~

~~2.4.4 Tributaries of the River Tas are considered separately below.~~

Unnamed Tributary of River Tas

~~2.4.5~~ 2.4.4 The Unnamed Tributary of the River Tas is an EA designated Main River. It is located within the Tas (Tasburgh to R. Yare) Water Body. The source of the Unnamed Tributary of the River Tas is located adjacent to the southern corner of Sub-Site 8A. It flows in a north westerly direction, before discharging into the River Tas, approximately 5km downstream of Site 8.

~~2.4.6~~ 2.4.5 The Unnamed Tributary of the River Tas runs between the boundary of Sub-Site 8A and Sub-Site 8B. There will be a CRC crossing of this watercourse.

Hempnall Beck

~~2.4.7~~ 2.4.6 The Hempnall Beck is a tributary of the River Tas. It lies within the Hempnall Beck Water Body (GB105034045720). The source is in Hempnall and the watercourse discharges into the River Tas approximately 3.5km west of CRC6.

~~2.4.8~~ 2.4.7 The Hempnall Beck runs through the Order Limits at CRC7, CRC6 and along Sub-Site 7B. The CRC will cross this watercourse in both CRC7 and CRC6.

Unnamed Tributary 1 of Hempnall Beck

~~2.4.9~~ 2.4.8 The Unnamed Tributary 1 of the Hempnall Beck lies within the Hempnall Beck Water Body (GB105034045720). The source is located in Fritton, approximately 750m south of Sub-Site 5B. The watercourse joins the Hempnall Beck within CRC6.

~~2.4.10~~ **2.4.9** The Unnamed Tributary 1 of the Hempnall is located within CRC6 and runs along Sub-Site 5B. The CRC will cross this watercourse in CRC6.

Unnamed Tributary 2 of Hempnall Beck

~~2.4.11~~ **2.4.10** The Unnamed Tributary 2 of the Hempnall Beck lies within the Hempnall Beck Water Body. The source is located approximately 270m east of CRC8. It joins the Hempnall Brook approximately 1.4km west of CRC8.

2.4.11 The tributary is located within CRC8. The CRC will cross this watercourse in CRC8.

Broome Beck

2.4.12 The Broome Beck is a tributary of the River Waveney and lies within the Broome Beck Water Body (GB105034045930). The source is located to the north-west of Bedingham Corner and discharges into the River Waveney at Broome, approximately 6.8km south-east of Site 10.

There is no direct interaction between the Broome Beck and the Order Limits.

~~2.5~~ **2.4.13**

Unnamed Tributary of Broome Beck

~~2.5.12~~ **2.4.14** The Unnamed Tributary of Broome Beck lies within the Broome Beck Water Body (GB105034045930). The source of the Unnamed Tributary of the Broome Beck lies adjacent to CRC9. It flows in a southerly direction before joining the Broome Beck, approximately 1km south of Sub-Site 10A.

2.4.15 This unnamed watercourse runs through Sub-Sites 10A, 10B and 10C.

Starston Brook

2.4.16 The Starston Brook is a tributary of the River Waveney which rises to the south of Great Moulton and discharges into the River Waveney at Homersfield. It lies within the Starston Brook Water Body (GB105034045880) and at its closest point the Starston Brook is located approximately 0.8km south of the BESS site and Site 2A.

2.4.17 Sites 1, 2, the BESS, part of CRC4 and the National Grid Substation and Grid connections lie within the catchment of this water body.

Pulham Beck

2.5.22.4.18 Pulham Beck is an ordinary watercourse that lies within the Starston Brook Water Body (GB105034045880) and is a tributary of the River Waveney. The source is located approximately 300m west of the National Grid Substation Site. The Pulham Beck discharges approximately 2.3km downstream of the National Grid Substation Site.

2.4.19 Pulham Beck runs along the boundary of the National Grid Substation Site.

River Chet

2.4.20 The **River Chet** is a tributary of the River Yare which rises in Poringland and flows eastwards, joining the River Yare to the west of Reedham. It lies within the Chet water body (GB105034051190) and flows north of the order limits, at the closest point approximately 2.3km north-east of Site 10 (where it is known as the Well Beck).

2.4.21 There is no direct interaction between the River Chet and the Order Limits, however Site 9, Sub-Site 10E and CRC14 lie within the water body catchment.

Field Drains

2.5.32.4.22 There are a number of small unnamed field drains within the Order Limits.

2.62.5 The Scheme

2.6.12.5.1 Full details of the Scheme are included in **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**.

2.6.22.5.2 There will be a minimum buffer of at least 10m from all watercourses, except where the watercourses are crossed. ~~Although the aim is to avoid watercourse crossings within the Order Limits, As detailed within the Design Approach Document [APP-212], consideration was given to avoiding existing landscape features such as watercourses when developing the CRC. However,~~ there are several locations where watercourse crossings will be necessary. Where there are any access routes or CRC crossings across field drains or WFD waterbodies, these have been assessed within this WFD Assessment.

Construction Phase

2.6.32.5.3 The areas being considered for the location of connecting cable routes are labelled as CRC in **Figure 2.1** and are typically 50m in width. Trenching within the area of the cable routes will be necessary for the Scheme. The construction methods are described in the **Outline Cable Route Construction Statement [EN0110014/APP/7.21]**. The maximum width of the cable trenches will be 1.6m (for low voltage) and 7m (for high voltage);

with a maximum depth of 1.2m (for low voltage) and 2m (for high voltage) as secured in the **Design Principles, Parameters and Commitments [APP-213]**. The width and spacing of the cable trenches may differ depending on environmental constraints, engineering requirements, number of circuits and if crossing third-party apparatus (e.g. utilities).

2.5.4 Where required, CRC river crossings will be trenchless, for example using horizontal directional drilling techniques (HDD). This will require a launch/reception pit to be excavated at the starting point and end point, respectively, with maximum dimensions of 25m x 25m. These will maintain a buffer of at least 10m from all watercourses.

2.6.42.5.5 Mounting structures for the PV arrays may comprise of anodised aluminium alloy or galvanised steel structures secured via piles extending up to 4m below ground level. Piles will be driven directly into the ground without the need for excavation for foundations and avoiding disturbance to the surrounding land surface. All electrical infrastructure associated with the panels (excluding cabling) will be elevated by the Mounting Structures so that it is no less than 300mm above the 1 in 100 (1%) Annual Exceedance Probability (AEP) flood level; or, where this is not possible, as high as practicable.

2.6.52.5.6 Temporary construction compounds, lay-down areas and access routes within the Sub-Sites and along the CRC will be necessary.

2.6.62.5.7 Haul routes will follow the alignment of existing agricultural tracks where practicable. New internal haul routes are likely to be a maximum of 6m wide and will comprise a permeable surface constructed of hardcore or gravel over a levelling layer of substrate.

2.6.72.5.8 Until further construction details are developed as the Scheme design progresses, the following construction assumption has been made for the purpose of this assessment as a worst-case scenario:

- Access crossings over watercourses will involve the construction of culverts in channel to allow the construction of access tracks over the culverts. This will occur in a wet channel.

2.6.82.5.9 The Outline Cable Route Construction Statement [EN0110014/APP/7.21] has been submitted with the DCO Application and provides further information with respect to watercourse crossings and associated Avoidance Areas. Potential impacts to sensitive receptors (private water supplies, groundwater and surface water bodies) from works during the construction phase are discussed in the **ES: Appendix 16.1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. An **Outline CEMP [EN0110014/APP/7.1]** has also been submitted with the DCO Application. Prior to the commencement of any phase of the Scheme, a Construction Environmental Management Plan (CEMP) will be submitted to and approved by the relevant planning authority. The CEMP will ensure the potential

construction impacts are minimised, as well as detail the environmental controls and best practice to minimise any adverse effects.

Operational Phase

2.6.92.5.10 The Scheme will be operational for up to 60 years. During the operational phase of the Scheme, on-site activities would include routine servicing, maintenance activities and the replacement of equipment such as Solar PV panels and BESS units when required, as well as periodic landscape and ecological management.

2.6.102.5.11 An **Outline LEMP** - [EN0110014/APP/7.4] has been prepared as part of the DCO Application. The management of the landscape and ecological features will be undertaken in accordance with a detailed Landscape and Ecological Management Plan (LEMP) that is secured via a DCO Requirement.

2.6.112.5.12 An **Outline OEMP** [EN0110014/APP/7.2] has been prepared as part of the DCO Application, which includes control measures to ensure no significant impacts will arise during the maintenance and replacement activities.

2.6.122.5.13 As well as the LEMP and OEMP, an **Outline BSMP** [EN0110014/APP/7.5] has been put in place to provide details on how a battery fire, in the unlikely event that one takes place, will be responded to and managed.

Decommissioning Phase

2.6.132.5.14 With the exception of the National Grid Substation and Grid Connection Infrastructure that would remain in-situ (as these will form part of National Grid's electricity transmission network), the Scheme will be decommissioned no later than 60 years following the date of final commissioning.

2.6.142.5.15 The underground cable, cable ducts and joint bays will be decommissioned in accordance with the applicable guidance and regulations at the time. Currently, the most environmentally acceptable option is considered to be leaving the cables in situ, as this avoids disturbance to overlying land and habitats and to communities. Alternatively, the cables can be removed by opening up the ground at regular intervals and pulling the cable through to the extraction point, leaving the ducting and jointing bays in place, avoiding the need to open up the entire length of the cable route.

2.6.152.5.16 The land within the Order Limits will be returned to the landowner and made available for its original use as far as reasonably practicable after decommissioning.

2.6.162.5.17 A Decommissioning Environmental Management Plan (DEMP) will be prepared for the Scheme. It will be submitted to and approved by the

relevant planning authority prior to decommissioning and is secured by a DCO Requirement. The DEMP will be in accordance with the **Outline DEMP [EN0110014/APP/7.3]** as submitted as part of the DCO Application.

3 Stage 1: Screening Assessment

3.1 Overview

- 3.1.1 The Anglian RBMP identifies the management catchment that the Order Limits are in as the Broadland Rivers Management Catchment, with the Order Limits located within Broadland Catchment Partnership area. Within this management catchment, the top three significant water management issues identified are as follows:
- Physical modifications;
 - Pollution from agriculture and rural areas; and
 - Pollution from wastewater.
- 3.1.2 Since 2009, the EA has completed annual assessments of the WFD waterbodies with the view of updating the RBMP. The Cycle 3 data, accessed via the EA's Catchment Data Explorer (CDE) (Ref 1-8) provides the best available information, which was used to inform this assessment. [The DEFRA Water Quality Explorer \(Ref 1-9\) provides water quality sampling data, and the currently available data has been reviewed to inform this assessment.](#)

3.2 WFD Water Body and Classifications: Hempnall Beck Water Body

- 3.2.1 The Hempnall Beck Water Body (GB105034045720) currently has a Poor classification. The water body is not designated as artificial or heavily modified.
- 3.2.2 There is one protected area within the WFD water body, namely the Hempnall Beck Nitrate Vulnerable Zone (NVZ) - Nitrates Directive.
- 3.2.3 Sensitive water receptors and designated sites as defined in **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]** are located within the Study Area, however none are associated with this WFD water body.
- 3.2.4 Sub-Sites 3, 4A, 4B, 5A, 5B, 6, 7A, 7B, 7C, 7G, 7H, 7I, 7J of the Scheme are located within the Hempnall Beck Water Body. Works within these Sites include Solar PV Arrays, Substations, conversion units and maintenance tracks, together with landscape/ecological mitigation. Within Site 3B there will be a new haul route crossing a field drain.
- 3.2.5 CRC4, CRC5, CRC7, CRC8, CRC10, CRC11 are located within the Hempnall Beck Water Body. CRC4, CRC6, CRC7 and CRC8 will cross the watercourse within this water body. The crossings will likely be drilled underneath the watercourse through a trenchless crossing approach, subject

to detailed design. Although a depth for this has not yet been established, it will be buried beneath the bed of a watercourse lying in flat land, which is therefore not expected to have a large erosive potential due to the reduced gradient causing the water to have lower energy levels. Therefore, no impact to the water body from the CRC crossings are expected.

- 3.2.6 Due to potential impacts to the Hempnall Beck Water Body from the potential construction of culverts (as a worst case scenario) in channel to provide new access crossings, all elements detailed in **Table 3.1 – 3.4** will be **screened in**.

Biological Elements

- 3.2.7 The biological classifications for the Hempnall Beck Water Body are shown in **Table 3.1**.

Table 3.1: Biological Elements Classifications – Hempnall Beck Water Body

Element	Classification	Objective
Angiosperms	Not Assessed	Not Assessed
Chironomids	Not Assessed	Not Assessed
Fish	Poor	Poor by 2015
Invertebrates	High	Good by 2015
Macroalgae	Not Assessed	Not Assessed
Macrophytes and Phytobenthos Combined	Not Assessed	Not Assessed
Phytoplankton	Not Assessed	Not Assessed
Overall	Poor	Poor by 2015

Hydromorphological Elements

- 3.2.8 The hydromorphological elements classifications for the Hempnall Beck Water Body are shown in **Table 3.2**.

Table 3.2: Hydromorphological Elements Classifications – Hempnall Beck Water Body

Element	Classification	Objective
Morphology	Supports good	Not Assessed

Element	Classification	Objective
Hydrological Regime	Supports good	Supports good by 2015
Overall	Supports good	Supports good by 2015

Physico-chemical Elements

3.2.9 The physico-chemical elements classifications for the Hempnall Beck Water Body are shown in **Table 3.3**.

Table 3.3: Physico-chemical Elements Classifications – Hempnall Beck Water Body

Element	Classification	Objective
Acid Neutralising Capacity	High	Good by 2015
Ammonia (Phys-Chem)	High	Good by 2015
Biochemical Oxygen Demand (BOD)	Not Assessed	Not Assessed
Dissolved Inorganic Nitrogen	Not Assessed	Not Assessed
Dissolved Oxygen	Good	Good by 2015
Phosphate	Poor	Poor by 2015
Temperature	High	Good by 2015
pH	High	Good by 2015
Salinity	Not Assessed	Not Assessed
Total Nitrogen	Not Assessed	Not Assessed
Overall	Moderate	Moderate by 2015

Specific Pollutants

3.2.10 The specific pollutants classifications for the Hempnall Beck Water Body are shown in **Table 3.4**.

Table 3.4: Specific Pollutants Classifications – Hempnall Beck Water Body

Element	Classification	Objective
Arsenic	Not Assessed	Not Assessed
Chromium	Not Assessed	Not Assessed
Chlorothalonil	Not Assessed	Not Assessed
Copper	High	High by 2015
Iron	High	High by 2015
Manganese	High	High by 2015
Mecoprop	Not Assessed	Not Assessed
Pendimethalin	Not Assessed	Not Assessed
Permethrin	Not Assessed	Not Assessed
Phenol	Not Assessed	Not Assessed
Triclosan	High	High by 2015
Zinc	High	High by 2015
Overall	High	High by 2015

Chemical Elements

- 3.2.11 The chemical elements for the Hempnall Brook Water Body were classified as a 'Fail' in 2019 due to changes in monitoring of the latest Cycle 3 records. However, in 2022, Chemical, Priority Hazardous Substances and Priority Substances were no longer assessed; therefore, all water bodies in England currently have this classification.
- 3.2.12 The construction of the Scheme will be carried out in line with a CEMP and the decommissioning will be carried out in line with a DEMP, whilst the operation of the Scheme will be carried out in line with an OEMP. An Outline CEMP, Outline DEMP and Outline OEMP have been submitted with the DCO Application. These management plans include pollution prevention measures and drainage strategies, therefore the chemical quality classifications and objectives are not expected to be impacted as a result of the Scheme. Potential future works to improve the chemical elements will also not be impeded by the Scheme.

3.3 WFD Water Body and Classifications: Tas (Tasburgh to R. Yare) Water Body

- 3.3.1 The Tas (Tasburgh to R. Yare) Water Body (GB105034051230) has a Moderate ecological status. It is designated as heavily modified.
- 3.3.2 There are two protected areas within this WFD Water Body:
- Norwich Crag and Gravels – Nitrates Directive; and
 - Hempnall Beck NVZ – Nitrates Directive.
- 3.3.3 Sensitive water receptors and designated sites as defined in **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]** are located within the Study Area, however, none are associated with this WFD water body.
- 3.3.4 Sub-Sites 7C, 7D, 7E, 7F, 7K, 7L, 8A and 8B lie within the Tas (Tasburgh to R. Yare) Water Body. The works within these Sites will include maintenance tracks, Substations, mounting structures and conversion units. There will be a new access crossing a field drain within Sub-Site 7F.
- 3.3.5 CRC10, CRC12, CRC13 are located within this Water Body. There will be a CRC crossing along the Unnamed Tributary of the River Tas, between Sub-Sites 8A and 8B. However, the crossings will likely be drilled underneath the watercourse through a trenchless construction approach, subject to detailed design. ~~Although aA minimum cable depth of 5m below the surveyed bed of main rivers, for this has not yet established, it will be buried beneath the bed of a watercourse lying in flat land,~~ which is therefore not expected to have a large erosive potential, as secured in the **Design Principles, Parameters and Commitments [APP-213]**. Therefore, no impact to the water body from the CRC crossings is expected.
- 3.3.6 Due to potential impacts to the River Tas (Tasburgh to R. Yare) Water Body from the potential construction of culverts (as a worst-case scenario) in channel to provide new access crossings, all elements detailed in **Tables 3.5 – 3.8** will be **screened in**.

Biological Elements

- 3.3.7 The biological classifications for the Tas (Tasburgh to R. Yare) Water Body are shown in **Table 3.5**.

Table 3.5: Biological Elements Classifications – Tas (Tasburgh to R. Yare) Water Body

Element	Classification	Objective
Angiosperm	Not Assessed	Not Assessed

Element	Classification	Objective
Chironomids	Not Assessed	Not Assessed
Fish	Moderate	Good by 2015
Invertebrates	High	Good by 2015
Macroalgae	Not Assessed	Not Assessed
Macrophytes and Phytobenthos Combined	Not Assessed	Not Assessed
Macrophytes Sub Element	Good	Not Assessed
Phytoplankton	Not Assessed	Not Assessed
Overall	Moderate	Good by 2015

Hydromorphological Elements

3.3.8 The hydromorphological elements classifications for the Tas (Tasburgh to R. Yare) Water Body are shown in **Table 3.6**.

Table 3.6: Hydromorphological Elements Classifications – Tas (Tasburgh to R. Yare) Water Body

Element	Classification	Objective
Morphology	Not Assessed	Not Assessed
Hydrological Regime	Supports good	Supports good by 2015
Overall	Supports good	Supports good by 2015

Physico-chemical Elements

3.3.9 The physico-chemical elements classifications for the Tas (Tasburgh to R. Yare) Water Body are shown in **Table 3.7**.

Table 3.7: Physico-chemical Elements Classifications – Tas (Tasburgh to R. Yare) Water Body

Element	Classification	Objective
Acid Neutralising Capacity	Not Assessed	Not Assessed

Element	Classification	Objective
Ammonia (Phys-Chem)	High	Good by 2015
Biochemical Oxygen Demand	High	Not Assessed
Dissolved Inorganic Nitrogen	Not Assessed	Not Assessed
Dissolved Oxygen	High	Good by 2015
Phosphate	Moderate	Moderate by 2015
Temperature	Good	Good by 2015
pH	High	Good by 2015
Salinity	Not Assessed	Not Assessed
Total Nitrogen	Not Assessed	Not Assessed
Total Phosphorous	Not Assessed	Not Assessed
Overall	Moderate	Moderate by 2015

Chemical Elements

- 3.3.10 The chemical elements for the Tas (Tasburgh to R. Yare) Water Body were classified as a Fail in 2019 due to changes in monitoring the latest Cycle 3 records. However, in 2022, Chemical, Priority Hazardous Substances and Priority Substances were no longer assessed; therefore, all waterbodies in England currently have this classification.
- 3.3.11 The construction of the Scheme will be carried out in line with a CEMP and the decommissioning will be carried out in line with a DEMP, whilst the operational of the Scheme will be carried out in line with an OEMP. An [Outline](#) CEMP, [Outline](#) DEMP and [Outline](#) eOEMP have been submitted with the DCO Application. The management plans include pollution prevention measures and drainage strategies. Therefore, the chemical quality classifications and objectives are not expected to be impacted as a result of the Scheme. Potential future works to improve the chemical elements will also not be impeded by the Scheme.

Mitigation Measures

- 3.3.12 As a result of the heavily modified designation, the EA have assigned mitigation measures to this water body, linked to the 2027 RBMP outcomes. The EA mitigation measures relevant to the Scheme are shown in **Table 3.8**.

Table 3.8: EA Mitigation Measures – Tas (Tasburgh to R. Yare) Water Body

Measure	Reason	Confidence in Achieving Measure
WINEP 2025-2028 (Anglian Water, Environment Agency) - investment for lower permitted P discharge concentrations 0.25mg/l	Control or manage point source discharges	Confident
Water Sensitive Farming, tailored advice and funded interventions (Norfolk Rivers Trust, River Waveney Trust)	Control or manage rural diffuse pollution	Confident
Community awareness raising - septic tanks and domestic treatment plants (River Waveney Trust, Groundwork), Yellow Fish	Control or manage rural diffuse pollution	Confident
River, riparian and floodplain habitat improvement - Upper Bure (NT, WMA), Yare Valley Parkway (EA, NCC, NRT)	Manage modified habitats	Confident
Restoring shallow lakes to a clear water state - Hoveton Great Broad (EA & NE), Hickling (BA), Ranworth, Barton	Manage modified habitats	Confident
River and floodplain reconnection and habitat improvements for flood risk and river basin planning (EA, WMA, NRT, BA, RWT)	Control or manage regulated flows	Confident
Waveney and Wensum tributaries habitat improvement including R. Dove, R. Tat (RWT, NRT, EA)	Manage modified habitats	Less Confident
Fish and eel barrier removal and bypass including Yare, Tiffey and Starston Beck (EA, NRT, RWT)	Mitigate the impacts on ecology from physical modifications in modified waters	Less Confident
Multi-use wetland creation for flood, water quality and quantity	Control or manage regulated flows	Less Confident

Measure	Reason	Confidence in Achieving Measure
and wildlife (EA, FWAG, BA, NRT, NT, AW, WMA, NFU, RSPB)		

3.4 WFD Water Body and Classifications: Starston Brook Water Body

- 3.4.1 The Starston Brook Water Body (GB105034045880) has a Moderate ecological status. It is not designated as artificial or heavily modified.
- 3.4.2 There are three protected areas within the WFD water body:
- River Waveney (NVZ) – Nitrates Directive;
 - Norwich Crag and Gravels – Nitrates Directive; and
 - River Waveney/Starston Brook and River Doe – Urban Waste Water Treatment Directive.
- 3.4.3 Sensitive water receptors and designated sites as defined in **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]** are located within the Study Area; however, none are associated with this WFD water body.
- 3.4.4 The Starston Brook Water Body covers Sites 1 and 2, as well as the BESS Site, and National Grid Substation Site. The proposed works within these Sites include maintenance tracks, substations, BESS, mounting structures and conversion units. In Site 1B, there will potentially be two new access crossings constructed over field drains.
- 3.4.5 CRC1, CRC2, CRC3 and CRC4 are located within the Starston Brook Water Body. There will be CRC crossings of the watercourse within this water body in CRC2, CRC3 and CRC4. However, the crossings will likely be drilled underneath the watercourse through a trenchless construction approach, subject to detailed design. Although a depth for this has not yet established, they will be buried beneath the bed underneath small watercourses that are not expected to have a large erosive potential. Therefore, no impact to the water body from the CRC crossings are expected.
- 3.4.6 Due to potential impacts to the Starston Brook from the potential construction of culverts (as a worst-case scenario) in channel to provide new access crossings, all elements detailed in **Tables 3.9 – 3.12** will be **screened in**.

Biological Elements

3.4.7 The biological classifications for Starston Brook Water Body are shown in **Table 3.9**.

Table 3.9: Biological Elements Classifications – Starston Brook Water Body

Element	Classification	Objective
Angiosperms	Not Assessed	Not Assessed
Chironomids	Not Assessed	Not Assessed
Fish	Not Assessed	Not Assessed
Invertebrates	Moderate	Good by 2015
Macroalgae	Not Assessed	Not Assessed
Macrophytes and Phytobenthos Combined	Good	Good by 2015
Macrophytes Sub Element	Good	Not Assessed
Phytoplankton	Not Assessed	Not Assessed
Overall	Moderate	Good by 2015

Hydromorphological Elements

3.4.8 The hydromorphological elements classifications for the Starston Brook Water Body are shown in **Table 3.10**.

Table 3.10: Hydromorphological Elements Classifications – Starston Brook Water Body

Element	Classification	Objective
Morphology	Supports good	Not Assessed
Hydrological Regime	Supports good	Supports good by 2015
Overall	Supports good	Supports good by 2015

Physico-chemical Elements

3.4.9 The physico-chemical elements classifications for the Starston Brook Water Body are shown in **Table 3.11**.

Table 3.11: Physico-chemical Elements Classifications – Starston Brook Water Body

Element	Classification	Objective
Acid Neutralising Capacity	High	Good by 2015
Ammonia (Phys-Chem)	High	Good by 2015
Biochemical Oxygen Demand (BOD)	High	Not Assessed
Dissolved Inorganic Nitrogen	Not Assessed	Not Assessed
Dissolved Oxygen	Good	Good by 2021
Phosphate	Poor	Good by 2027
Temperature	High	Good by 2015
pH	High	Good by 2015
Salinity	Not Assessed	Not Assessed
Total Nitrogen	Not Assessed	Not Assessed
Total Phosphorous	Not Assessed	Not Assessed
Overall	Moderate	Good by 2027

Specific Pollutants

3.4.10 The specific pollutants classifications for the Starston Brook Water Body are shown in **Table 3.12**.

Table 3.12: Specific Pollutants Classifications – Starston Brook Water Body

Element	Classification	Objective
Arsenic	Not Assessed	Not Assessed
Chromium	Not Assessed	Not Assessed
Chlorothalonil	Not Assessed	Not Assessed
Copper	High	High by 2015
Iron	High	High by 2015
Manganese	High	High by 2015
Mecoprop	Not Assessed	High by 2015

Element	Classification	Objective
Pendimethalin	High	High by 2015
Permethrin	Not Assessed	Not Assessed
Phenol	Not Assessed	Not Assessed
Triclosan	Not Assessed	Not Assessed
Zinc	High	High by 2015
Overall	High	High by 2015

Chemical Elements

- 3.4.11 The chemical elements for the Starston Brook Water Body were classified as a Fail in 2019 due to changes in monitoring the latest Cycle 3 records. However, in 2022, Chemical, Priority Hazardous Substances and Priority Substances were no longer assessed; therefore, all water bodies in England currently have this classification.
- 3.4.12 The construction of the Scheme will be carried out in line with a CEMP and the decommissioning will be carried out in line with a DEMP, whilst the operational of the Scheme will be carried out in line with an OEMP. An [Outline](#) CEMP, [Outline](#) DEMP and [Outline](#) OEMP have been submitted with the DCO Application. The management plans include pollution prevention measures and drainage strategies. Therefore, the chemical quality classifications and objectives are not expected to be impacted as a result of the Scheme. Potential future works to improve the chemical elements will also not be impeded by the Scheme.

3.5 WFD Water Body and Classifications: Broome Beck Water Body

- 3.5.1 The Broome Beck Water Body (GB105034045930) has a Moderate ecological status. It is designated as heavily modified.
- 3.5.2 CRC8, CRC9 and CRC14, as well as Sub-Sites 3B, 10A, 10B, 10C and 10D lie within the Broome Beck Water Body. There are no main water rivers or ordinary watercourses within the Site, however, an Unnamed Tributary of Broome Beck runs along Sub-Sites 10A, 10B and 10C, and a few field drains are located within the Sub-Sites 10B, 10C and CRC8, CRC9 and CRC14.
- 3.5.3 The CRC passes under field drains in CRC9, CRC14 and between Sub-Sites 10A and 10B and between Sub-Sites 10B and 10C. However, the crossing will likely be drilled underneath the watercourse through a trenchless construction approach, subject to detailed design. Although a

depth for this has not yet established, it will be buried beneath the bed underneath a small watercourse that is not expected to have a large erosive potential. Therefore, no impact to the water body from the CRC crossings are expected.

- 3.5.4 As a result, the Broome Beck Water Body will be **screened out** of the assessment.

3.6 WFD Water Body and Classifications: Tas (Head to Tasburgh) Water Body

- 3.6.1 The Tas (Head to Tasburgh) Water Body (GB105034045730) has a Moderate ecological status. It is not designated as artificial or heavily modified.
- 3.6.2 The Tas (Head to Tasburgh) Water Body covers part of CRC4, however, the River Tas is located approximately 4km west of CRC4 and no main or ordinary watercourses associated with this water body are located within the Site. There is a small field drain associated with this water body that is located within this CRC4 and along the boundary of CRC4. However, there are no proposed watercourse crossings and there will be a buffer of at least 9m from IDB watercourses and at least 10m from watercourses that are not IDB maintained.
- 3.6.3 As a result, the Tas (Head to Tasburgh) Water Body will be **screened out** of the assessment.

3.7 WFD Water Body and Classifications: Chet Water Body

- 3.7.1 The Chet Water Body (GB105034051190) has a Poor ecological status. It is not designated as artificial or heavily modified.
- 3.7.2 Site 9, Sub-Site 10E and CRC14 lie within the Chet Water Body. There are no main rivers or ordinary watercourses within Site 9 or Sub-Site 10E. There are small drains adjacent to the Site 9 and some small drains encroach into Sub-Site 10E. However, all works will maintain a buffer of 10m from watercourses and therefore works within these Sites are not expected to impact to the Chet Water Body. As a result, the Chet Water Body will be **screened out** of the assessment.

3.8 WFD Water Body and Classifications: Broadland Rivers Chalk and Crag Water Body

- 3.8.1 The Order Limits are underlain by the Broadland Rivers Chalk and Crag Water Body (GB40501G400300). This groundwater body covers a total surface area of approximately 3,076km² and has a Poor ecological-overall status classification.

3.8.2 Excavations for the cables will be undertaken in line with the CEMP, which will include measures to minimise disturbance and pollution during the construction phase. There is not anticipated to be any change to the groundwater flow pathways as the excavation works will involve laying the cable and then filling the excavated ground back in.

3.8.3 Although the area within the Order Limits being excavated has not yet been confirmed, the indicative sizing of the CRC excavation trenches and entry/reception pits will be minimal compared to the total area of the groundwater body of 3,076km², it is considered that any impact to the groundwater conditions and characteristics will be negligible.

3.8.4 The piles to support the mounting structures for the PV panels will be installed up to 4m below ground level creating potential pathways for contaminants during the construction phase of the Scheme. As outlined in the **ES Volume 3, Appendix 16.1 - Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**, a Foundation Works Risk Assessment (FWRA) will be undertaken post-consent, as secured in the **Outline CEMP [EN0110014/APP/7.1]**, for any structures requiring deep foundations and/or piling to mitigate any potential risks to the underlying aquifer. Where trenchless crossings interact with Principal or Secondary A aquifers or pass beneath surface watercourses or sensitive ecological receptors, a Hydrogeological Risk Assessment will be undertaken, if required, post-consent to further assess potential impacts and identify required mitigation measures. The embedded mitigation measures for the Scheme together with any additional mitigation measures that may be identified within these assessments will minimise impacts to ground and surface waterbodies during the construction phase. Once the Scheme is operational, additional impacts are not expected.

~~3.8.33.8.5~~ Therefore, the Broadland Rivers Chalk and Crag Water Body will be **screened out** of the assessment. However, the connection with groundwater will be assessed as part of the surface water water body catchment assessment.

3.9 Anglian RBMP Objectives

3.9.1 The environmental objectives of the Anglian District RBMP reflect those of the WFD, namely:

- To prevent deterioration of the status of surface water and groundwater;
- To achieve objectives and standards for protected areas;
- To aim to achieve 'good status' for all waterbodies;
- To reverse any significant and sustained upward trends in pollutant concentrations in groundwater;

- The cessation of discharges, emissions, and losses of priority hazardous Substances into surface water; and
- To progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants.

3.9.2 The priority issues identified within the Broadland Rivers Management catchment are water quality and hydromorphology.

3.10 Screening for High Status

- 3.10.1 There are three WFD waterbodies that will be carried forward for Scoping Assessment - the Hempnall Beck Water Body which is classified as Poor status; Tas (Tasburgh to R.Yare) Water Body classified as Moderate status; and the Starston Brook Water Body which is also classified as Moderate status. These are therefore not High status water bodies, as they do not display conditions which are close to being undisturbed.
- 3.10.2 The Scheme will therefore not pose a risk to any existing High status or potential High status water body. It is therefore compliant with the risk assessment step of the EA's process for ensuring that physical works to water bodies meet legal requirements under WFD and under wider environmental legislation.

3.11 Screening Summary

3.11.1 The following WFD components have been **screened in** for assessment:

- Hempnall Beck WFD Water Body:
 - Protected areas;
 - Biological quality elements;
 - Hydromorphological supporting elements;
 - Physico-chemical quality elements; and
 - Specific pollutants.
- Tas (Tasburgh to R. Yare) Water Body:
 - Protected areas;
 - Biological quality elements;
 - Hydromorphological supporting elements;
 - Physico-chemical quality elements; and
 - Mitigation measures.
- Starston Brook Water Body:
 - Protected areas;

- Biological quality elements;
- Hydromorphological supporting elements;
- Physico-chemical quality elements; and
- Specific pollutants.

4 Stage 2: Scoping Assessment

4.1 Assessment of Potential Impacts

- 4.1.1 This section comprises the scoping assessment of the Hempnall Beck, Tas (Tasburgh to R. Yare) and Starston Brook Water Bodies. It includes Stage 2 of the EA WFD assessment methodology outlined within **Figure 2.1** for the construction, operation and maintenance, and decommissioning phases of the Scheme. **Section 3.2 – 3.4** details the WFD classifications of these waterbodies.

Biological Quality Elements

- 4.1.2 The biological elements could potentially be impacted by the Scheme, which would impact the WFD classifications. **Table 4.1** below explains any potential impacts from the Scheme and if mitigation measures will be required.

Table 4.1: Scoping Assessment of the Biological Elements - Hempnall Beck Water Body, Tas (Tasburgh to R. Yare) Water Body and Starston Brook Water Body

Element	Construction / Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
Angiosperms	Construction of the access crossings by installing culverts (as a worst-case scenario) has the potential to impact fish passage, disrupt fine sediment and flow whilst the works are occurring in channel. There is also a risk of pollutants being released into the watercourses.	A culvert in the watercourse to allow access tracks (as a worst-case scenario) could impact fish passage by reducing the gravel bed habitat and constricting water flow. However, as the access crossings will only be occurring on field drains and occupying a small area, there will be limited impact to these elements. Minimal access to the Order Limits will be required. This has, however, the potential to	Yes. The CEMP and DEMP will specify silt mitigation and pollution prevention methods. The OEMP will specify pollution prevention methods. Drainage strategy will be designed to mitigate polluted water reaching the watercourses. The outline drainage strategy for the Site is included in ES: Appendix Flood Risk Assessment & Outline Surface Water Drainage Strategy
Chironomids (CPET)			
Fish			

Element	Construction / Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
Invertebrates	During the construction and decommissioning phases there will be increased traffic on-site. This has the potential to cause pollution incidents (i.e. oil leaks), as well as causing soil compaction which can subsequently increase surface water run-off, both of which could impact the biological elements.	increase the risk of pollution incidents (i.e. oil leaks), which could impact these elements. A buffer of at least 10m from watercourses will be maintained, except where watercourses are crossed. An OEMP will be developed to manage the operational phase. Surface water runoff will be mitigated to prevent polluted waters reaching the watercourses and impacting the biological elements. There will be drainage schemes in place to mitigate pollution reaching watercourses.	[EN0110014/APP/6.3.9.1]
Macroalgae	However, all works will be carried out in line with a CEMP and DEMP which will include silt mitigation measures (to reduce the impact of sediment in channel) and pollution prevention measures.	The outline drainage strategy for the Site is included in ES: Appendix Flood Risk Assessment & Outline Surface Water Drainage Strategy [EN0110014/APP/6.3.9.1] .	
Macrophytes and Phytobenthos Combined	All development will maintain a buffer of at least 10m from watercourses, apart from the crossings which include installing access culverts	The impact to these elements is expected to be minimal.	
Phytoplankton			

Element	Construction / Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
	into the channel, therefore reducing the impact of pollution to these elements. There will also be drainage schemes in place during the construction and decommissioning phase to mitigate against polluted water reaching watercourses. Consequently, due to the small size of most of the field drains, impacts are expected to be minimal and mitigated.		

- 4.1.3 During extended habitat surveys, invasive non-native species (INNS) were recorded, including giant hogweed (Sub-Site 5A) in low densities. The presence of this species is not considered to be a significant ecological constraint and legislative compliance will be adhered to as standard. The avoidance, management and/or eradication of INNS will be detailed within the LEMP, CEMP, OEMP and DEMP and include the requirement for pre-construction/pre-decommissioning surveys to determine the spread and control measures required.

Hydromorphological Supporting Elements

- 4.1.4 The hydromorphological elements could be affected by the Scheme, which would in turn impact the WFD classifications. **Table 4.2** explains potential impacts from the Scheme and if mitigation measures will be required.

Table 4.2: Scoping Assessment of the Hydromorphological Elements - Hempnall Beck Water Body, Tas (Tasburgh to R. Yare) Water Body and Starston Brook Water Body

Element	Construction / Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
Quantity and dynamics of flow	The construction of culverts (in a worst-case scenario) in channels to provide access over watercourses could impact the quantity and dynamics of flow. However, as the access tracks are only crossing field drains that have minimal dynamics the impact to flow should also be minimal. The surface water drainage will control water entering the watercourse during the construction phase and decommissioning phase and will mitigate any changes to flow quantity from runoff.	Access crossings across watercourses could impact quantity and dynamics of flow due to changes in friction. However, as these are in small watercourses, cover a small area and are in drains where there is minimal dynamics, the overall impacts are expected to be minimal. Additionally, an OEMP will be developed to manage the operational phase. Surface water drainage will manage water entering the watercourses and therefore runoff will have a minimal impact to flow. The outline drainage strategy for the Site is included in the ES: Appendix Flood Risk Assessment & Outline Surface Water Drainage Strategy [EN0110014/APP/6.3.9.1]. EN0110014/APP/6.3.9.1.	No
Connection to groundwater water body	The works are not anticipated to impact the connection to the groundwater water body as the area of the Order Limits only covers a very small area in comparison to that groundwater water body.	There will be a change to the permeability across the Order Limits due to the construction of access tracks and built structures. However, these will cover a very small area in comparison to the groundwater water body. Additionally, the access tracks will be made of permeable material and therefore the impacts are considered to be minimal.	No
River continuity	The construction of culverts (as a worst-case scenario) to provide	Although new culverts have the potential to disrupt river continuity, they will only occupy	Yes. CEMP and

Element	Construction / Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
	access has the potential to disrupt sediment. However, construction works will be carried out in line with a CEMP which will include silt mitigation measures to reduce the impact of sediment in channel and changes to river continuity. There will also be a DEMP in place during the decommissioning phase, which will ensure that the impact to river continuity is minimised during decommissioning.	field drains and cover a small area of the watercourses, and therefore the impacts to river continuity are expected to be minimal.	DEMP will include silt mitigation methods.
River depth and width	The construction works are not anticipated to impact the width and depth of the water body as the works will maintain a buffer of at least at least 10m from watercourses, apart from the crossings which include installing access culverts into the channel. The addition of new culverts to the watercourse may reduce river width and depth, however as only small areas of the watercourses will be culverted, the impacts are considered minimal.	The addition of new culverts to the watercourses may reduce river width and depth, which could locally increase flow energy and sediment transportation. However, as only small areas of the watercourses will be culverted, the impacts are considered minimal.	No.
Structure and Substrate of the riverbed	The construction works will alter the structure and substrate of the riverbed when the access culverts (as a	The addition of new culverts to the watercourses will alter the structure and substrate of the riverbed. However, as these will only be located within field	No.

Element	Construction / Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
	worst-case scenario) are installed, due to disturbance of the riverbed. However, this will only be a temporary disturbance and therefore the impacts will be minimal.	drains and will only occupy a small area of the watercourses, the impacts are considered to be minimal.	
Structure of the riparian zone	The construction of access tracks will involve removal of riparian vegetation. However, as the access tracks will only cover a small area, the impacts to these elements will be minimal. After the decommissioning phase the land within the Scheme will be restored and returned to its original use as far as reasonably practicable.	There will be a small area of riparian vegetation removed to allow access tracks over the watercourse. However, as the access tracks will only cover a small area, the impacts to these elements will be minimal.	No.

Physico-chemical Quality Elements

- 4.1.5 The physico-chemical elements could be impacted by the Scheme, which would in turn impact the WFD classifications. **Table 4.3** explains potential impacts from the Scheme and if mitigation measures will be required.

Table 4.3: Scoping Assessment of the Physico-chemical Elements – Hempnall Beck Water Body, Tas (Tasburgh to R. Yare) Water Body and Starston Brook Water Body

Element	Construction/ Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
Acid Neutralising Capacity	Installing culverts (as a worst-case scenario) can disrupt flow and	New culverts have the potential to reduce dissolved oxygen as they	Yes. CEMP and DEMP will

Element	Construction/ Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
Ammonia (Phys-Chem)	therefore alter the dissolved oxygen and temperature levels.	change flow dynamics. However, as the culverts will only occupy a small area of the watercourse, the impacts to dissolved oxygen will be minimal.	include silt mitigation methods.
Biochemical Oxygen Demand	There is potential for in channel construction and decommissioning works to disrupt sediment which could release ammonia and phosphate.	There will be an OEMP in place to manage the operational phase of the works and mitigate impacts to these elements.	Drainage strategy has been designed to mitigate polluted water reaching the watercourses.
Dissolved Oxygen	There will be a buffer of at least 10m from watercourses apart from the crossings which include installing access culverts into the channel. The construction works will be carried out in line with a CEMP, which will incorporate silt mitigation, and mitigate the impacts to these elements. There will also be a DEMP in place during the decommissioning phase, which will mitigate the impact to these elements. In addition, there will also be a drainage strategy in place during the construction and decommissioning phases to mitigate pollution reaching watercourses.	There will also be a surface water drainage strategy in place during the operational phase which will mitigate polluted waters entering the watercourses. The outline drainage strategy for the Site is included in <u>the ES: Appendix Flood Risk Assessment & Outline Surface Water Drainage Strategy</u> <u>[EN0110014/APP/6.3.9.1].</u> <u>EN0110014/APP/6.3.9.1.</u>	
Phosphate			
Temperature			
pH			
Salinity			
Total Nitrogen			
Total Phosphorous			

4.1.6 All works will be in line with a CEMP and a DEMP. A surface water drainage strategy has been designed for the DCO Application and detailed design. The surface water drainage strategy would be implemented during the construction, decommissioning and operational phases of the works to reduce the impacts on surface water runoff.

Specific Pollutants

4.1.7 The specific pollutants classifications for the Hempnall Beck Water Body and Starston Brook Water Body are shown in **Table 4.4**.

Table 4.4: Scoping Assessment of the Specific Pollutants for Hempnall Beck Water Body and the Starston Brook Water Body

Element	Construction/ Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
Copper	As culverts (as a worst-case scenario) will be constructed in channel to allow the construction of access crossings, there is the potential for fine sediment to be disturbed, as well as pollutants entering the watercourses. During the construction and decommissioning phases there will be increased traffic on Site. This has the potential to cause pollution incidents (i.e. oil leaks). The works will be carried out in line with the CEMP and DEMP, which will include silt mitigation and pollution prevention measures. There will be a buffer of at least 10m from watercourses apart from the crossings which include installing access culverts (as a worst-case scenario) into the channel, and therefore the impact of pollution to these elements is reduced. In addition, there will also be a drainage strategy in place during the construction and decommissioning phases	Minimal access on-site will be required which has the potential to increase the risk of pollution incidents (i.e. oil leaks), which could impact these elements. However, there will be a buffer of at least 9m from IDB. watercourses and at least 10m from watercourses that are not IDB maintained, apart from the crossings which include installing access culverts into the channel, so the impact to these elements is expected to be minimal. There will be a small increase in permeability across the Order Limits due to the increase in built areas at the Substations and BESS. Surface water runoff will need to be mitigated to prevent polluted waters reaching the watercourses and impacting the biological elements. There will be an OEMP in place during the operational phase to mitigate the impacts to these elements. There will also be drainage strategy in place during the	Yes. CEMP and DEMP will include silt mitigation methods. Drainage strategy has been designed to mitigate polluted water reaching the watercourses.
Iron			
Manganese			
Triclosan			
Zinc			

Element	Construction/ Decommissioning Phase	Operational Phase	Mitigation Measures Needed?
	to mitigate polluted water reaching watercourses.	operational phase to mitigate this. The outline drainage strategy for the Site is included in ES: Appendix Flood Risk Assessment & Outline Surface Water Drainage Strategy [EN0110014/APP/6.3.9.1] .	

Protected Areas

- 4.1.8 Protected areas could be impacted by the Scheme, which would in turn impact the WFD classifications. **Table 4.5** below explains any impacts from the Scheme and whether mitigation measures will be required.

Table 4.5: Scoping Assessment of the Protected Areas for - Hempnall Beck Water Body, Tas (Tasburgh to R. Yare) Water Body and Starston Brook Water Body

Water Body	Protected area	Construction / Decommissioning Phases	Operational Phase	Mitigation Measures Needed?
Hempnall Beck Water Body and Tas (Tasburgh to R. Yare) Water Body	Hempnall Beck Nitrate Vulnerable Zone (NVZ) - Nitrates Directive	The Order Limits are located within the NVZ. Although ground conditions may be disturbed by the cable route, ES: Chapter 16 Ground Conditions [EN0110014/APP/6.1.16] does not indicate any likely significant effects to ground conditions and the installation of cables will not change the nitrate relationship and will not increase nitrate inputs. Therefore, no change to the nitrate levels or this NVZ is expected as a result of the Scheme.		No.
Tas (Tasburgh to R. Yare) Water Body and	Norwich Crag and Gravels – Nitrates Directive	The Order Limits are not located in this protected area and therefore will not have an impact on it.		No.

Water Body	Protected area	Construction / Decommissioning Phases	Operational Phase	Mitigation Measures Needed?
Starston Brook Water Body				
Starston Brook Water Body	River Waveney (NVZ) - Nitrates Directive	The Order Limits are located within the NVZ. Although ground conditions may be disturbed by the cable route, this will not change the nitrate relationship or increase the nitrogen input. Therefore, no change to the nitrate levels or this NVZ is expected as a result of the Scheme.		No.
Starston Brook Water Body	River Waveney/Starston Brook and River Doe – Urban Waste Water Treatment Directive	The Order Limits are not located in this protected area and therefore will not have an impact on it.		No.

Mitigation Measures

- 4.1.9 The supporting elements classification encompasses EA-assigned mitigation measures (described in **Section 3.3.12**) which could be impacted by the Scheme, which would in turn impact the WFD classifications. **Table 4.6** below explains any impacts from the Scheme and if the EA-assigned mitigation measures can be implemented with the Scheme in place.

Table 4.6: Scoping Assessment of Mitigation Measures for Tas (Tasburgh to R. Yare) Water Body

Intervention/ Mitigation Measure	In Place?	Can the measure be implemented / continued with the Scheme in place?
WINEP 2025-2028 (Anglian Water, Environment Agency) - investment for lower permitted P (Phosphorous) discharge concentrations 0.25mg/l	Yes	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.
Water Sensitive Farming, tailored advice and funded interventions	N/A	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.

Intervention/ Mitigation Measure	In Place?	Can the measure be implemented / continued with the Scheme in place?
Community awareness raising - septic tanks and domestic treatment plants (River Waveney Trust, Groundwork), Yellow Fish	N/A	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.
River, riparian and floodplain habitat improvement - Upper Bure, Yare Valley Parkway	N/A	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.
Restoring shallow lakes to a clear water state - Hoveton Great Broad, Hickling, Ranworth, Barton	N/A	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.
River and floodplain reconnection and habitat improvements for flood risk and river basin planning	N/A	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.
Waveney and Wensum tributaries habitat improvement including R. Dove, R. Tat	N/A	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.
Fish and eel barrier removal and bypass including Yare, Tiffey and Starston Beck	N/A	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.
Multi-use wetland creation for flood, water quality and quantity and wildlife	N/A	Yes. The Scheme will not compromise the ability of this measure being achieved within the catchment.

4.1.10 In summary, the Scheme is compliant with the EA's process for ensuring that physical works to water bodies meet legal requirements under wider environmental legislation, subject to appropriate mitigation, which is discussed in **Section 1.3**.

5 Stage 3: Impact Assessment

5.1 Assessment of Potential Mitigation

- 5.1.1 This section includes Stage 3 of the EA's WFD assessment methodology outlined within **Figure 1.1** for the construction, operation and maintenance, decommissioning stages of the Scheme.

Mitigation Measures – Production of a CEMP, DEMP and OEMP

- 5.1.2 The construction phase has the potential to impact the Hempnall Beck Water Body, Tas (Tasburgh to R. Yare) Water Body and the Starston Brook Water Body as the Scheme could disrupt material and fine sediment, potentially impacting habitats, sediment transport, deposition and water quality.
- 5.1.3 As mentioned previously, an Outline CEMP, Outline DEMP and Outline OEMP has been submitted with the DCO Application. These outline management plans provide details of the appropriate measures to mitigate the impact of the Scheme. The final management plans to be submitted to the relevant planning authority for approval must be substantially in accordance with those outline plans, in accordance with the DCO Requirements.
- 5.1.4 Once approved by the relevant local authority, the CEMP, DEMP and OEMP will include the management and mitigation of any on-site water quality impacts in the construction, decommissioning and operational phases. This ~~will~~should include pollution prevention methods and other measures to manage the migration of contaminants present on the Order Limits during these phases.
- 5.1.5 To mitigate the risk of sediment disruption and mobilisation and to protect downstream water bodies, silt mitigation needs to be implemented in the channel during construction to minimise disrupted silt travelling downstream during the construction phase. Silt mitigation methods may include carrying out in-channel works in a dry channel, which may use a temporary dam and a fish-friendly pump to maintain flow through the watercourses. Alternatively works should be undertaken with silt mitigation (such as a silt curtain) located in the channel downstream to trap any suspended sediment.

Mitigation Measures – Drainage Strategy

- 5.1.6 The construction, operation and maintenance, and decommissioning works have the potential to increase surface water runoff and transport pollution and sediment to the watercourses. To mitigate the risk of this, the drainage strategy will be designed to mitigate polluted water reaching the watercourses. This would make sure that only clean, unpolluted runoff enters

the watercourses, and that damage to water quality and habitats within the watercourses and downstream waterbodies would be prevented.

5.2 Assessment of Compliance with the WFD Objectives

- 5.2.1 With the mitigation methods mentioned above, the Scheme will not cause deterioration of the WFD classifications or prevent future work improving the WFD water body classifications. They do not impact the ecological, hydromorphological or water quality elements of the waterbodies.
- 5.2.2 The Scheme will not impact any water body within the WFD catchment or the River Basin District and will not prevent future work from achieving or maintaining the 'Good' status the WFD waterbodies.
- 5.2.3 In summary, the Scheme is **compliant with the WFD objectives** of the discussed elements.

6 Summary and Conclusions

6.1 WFD Quality Elements

6.1.1 The Scheme lies within the WFD Water Body catchments:

- Hempnall Beck Water Body;
- Tas (Tasburgh to R. Yare) Water Body;
- Starston Brook Water Body;
- Broome Beck Water Body;
- Chet Water Body;
- Tas (Head to Tasburgh) Water Body; and
- Broadland Rivers Chalk and Crag Water Body.

6.1.2 Four of these waterbodies were screened out as there will be no watercourse crossings and the Scheme is not anticipated to impact them. The three waterbodies screened in are the Hempnall Beck Water Body, Tas (Tasburgh to R. Yare) Water Body and Starston Brook Water Body.

6.2 Mitigation Measures

6.2.1 The recommended mitigation measures are:

- A CEMP, OEMP and DEMP to be produced before construction, operation and demolition works are carried out respectively, including pollution prevention measures and silt mitigation; and
- Drainage strategy designed and constructed in accordance with best practice, national and local guidance/standards.

6.3 Conclusion

6.3.1 It has been demonstrated that the Scheme will not have any significant impacts on the WFD elements once the mitigation measures are implemented.

6.3.2 The Scheme will not result in a significant change from the baseline conditions relating to the overall WFD waterbodies. As demonstrated, this will not result in deterioration of the current WFD water body.

6.3.3 The creation of potential new pollutant pathways during the construction phase will be minimised and mitigated through the adoption of best practice techniques and the implementation of the CEMP, OEMP and DEMP.

- 6.3.4 The Scheme will not affect the ability for the key actions identified in the RBMP to be implemented for the catchment. As such, the works are compliant with the WFD and will not prevent the water bodies from achieving Good status in the future.

References

- Ref 1-1. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 [The Water Environment \(Water Framework Directive\) \(England and Wales\) Regulations 2017](#) Accessed: 01/05/2025
- Ref 1-2. The Floods and Water (Amendment etc.) (EU Exit) Regulations 2019 [The Floods and Water \(Amendment etc.\) \(EU Exit\) Regulations 2019](#) Accessed: 01/05/2025
- Ref 1-3. Environment Agency (2022) - River Basin Management Plan for the Anglian River Basin District (2022) [Anglian river basin district river basin management plan: updated 2022 - GOV.UK](#) (Accessed: 01/05/2025)
- Ref 1-4. Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive [Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive - GOV.UK](#) (Accessed: 01/05/2025)
- Ref 1-5. LandIS - Land Information System - Soilsclapes soil types viewer [LandIS - Land Information System - Soilsclapes soil types viewer](#) (Accessed: 12/05/2025)
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- Ref 1-7. DEFRA Magic Map Application [MAGIC](#) (Accessed: 12/05/2025)
- ~~Ref 1-8.~~ Environment Agency Catchment Data Explorer [England | Catchment Data Explorer](#) Accessed: 01/05/2025
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